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DENTISTRY IN ITS RELATION TO THE STATE.*

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After commenting upon the universality of the usefulness of dentists to suffering humanity, Dr. Cunningham pointed out that the education of a dentist is three-fifths medical and two-fifths special; and this latter two-fifths is taken by the Medical Council as tantamount to the remaining two-fifths of the medical curriculum.

This recognition of dental surgery as a learned profession by the State, entitles the dental profession to certain rights and privileges, viz., the recognition by the administrative officers of the State, and also entails upon us the duty of exerting all our power and energy in demanding the exercise of those rights and privileges in public function, wherever we deem our professional help can be of service to the State, not only in justice to those entering the profession after an education as long, as onerous, and as expensive as that of the general medical practitioner, but in justice to, and in the interests of, the community as a whole.

The State recognises the medical profession by certain public appointments in connection with the various departments of the State. Wherever such medical services are deemed a necessary provision, dental services as such, when required, should constitute an essential part of such provision. If dental services are required and not furnished, the interests of the State must suffer. Many public medical appointments are for carrying out special purposes and functions, such as medical officers and inspectors under the Local Government Board and Medical Commissioners in Lunacy, &c. ; but it is not the purport of this paper to inquire into the possible utility of appointments of the dental practitioner as a specialist, not to urge the creation of new offices under the State, though there are undoubtedly many occasions when the State might derive benefit by availing itself of the special knowledge and acquirements of the dental surgeon. It is proposed to limit the scope of the present inquiry to those departments of the State in which the medical practitioner may be said to act as a general practitioner. Accepting the general proposition that medical service includes dental service as well, let us see what provision is made by the State.

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* Portion of a paper read at the Annual General Meeting of the British Dental Association. London, 1886.

In the higher departments of the State, possibly, recognition is complete ; as in her Majesty's household by the appointment of Sir Edwin Saunders as surgeon-dentist, which post he also holds in H.R.H. the Prince of Wales's household, and Mr. Truman as dentist to the household ; as in Scotland by the appointment of Dr. Smith as surgeon-dentist in ordinary, and in Ireland by the appointment of surgeon-dentist in ordinary to the Lord Lieutenant. If in India and the Colonies similar State medical appointments are made, dental appointments should be equally recognised.

The principal departments of the State in which it seems time to claim such recognition of the dental practitioner as is already extended to the medical practitioner, are in H.M. Post-office, the Police, H.M. Prisons, the India Office, but principally the Army and the Navy.

We would first of all, therefore, call your attention to the Army and the provision made for medical services in it. The regular forces in the British Army in 1882* consisted of 174,557 men, the average abroad being 87,710 and the average number at home 86,847.

Medical attendance and service is provided by the specially trained medical staff, now known as the Army Medical Department. It is the duty of this department, not only to undertake all that concerns the medical, surgical, and hygienic treatment of this body of men, but also that of about 8,632 women and 16,125 children, being the wives and children of our soldiers.

From appendix A, which I have been allowed to quote from the valuable paper on " Dental Surgery in the Army," read by Mr. Gaddes at the International Medical Congress, 1881, it is evident that the chief of the Army Medical Department, as long ago as 1857 was cognizant of the short-comings of the service, so far as regarded the care and treatment of the teeth.

It has long been a notorious fact that, practically, the only dental treatment the soldier has received, has been that of the extraction of every aching tooth, or possibly the administration of a pill with a view of relieving dental pain. It is also an undoubted fact that too frequently the army medical surgeon leaves even this limited and ancient kind of dental treatment to the hospital sergeant, though where, when and how this latter functionary acquires his knowledge and skill must be left to your imagination, as no provision is made for it in the course of special instruction he has to undergo in the training school of the Medical Staff Corps at Aldershot. We fear that whatever skill and ability he may possess, possibly by dint of practice and natural aptitude, in some cases great, can only be acquired at the expense of untold sufferings on the part of the unfortunate soldier.

Notwithstanding this state of affairs, you will doubtless be surprised at the very practical admission of the necessity of conservative treatment of teeth as opposed to extraction, which has existed for a long time in the Army Medical Department. In the regulations of the Army Medical Department, p. 314, appears Appendix No. 24 (app. F. of this paper), which describes the contents of a case of tooth stopping and scaling instruments. A clearer and more decided admission of the point we are contesting could not possibly exist ; but, at the same time, the nature of the materials and instruments provided, is equally as conclusive a demonstration of the absolute lack of a knowledge on the part of the department itself of the first requirements for attaining its object. However much we may respect the intelligent inspiration that prompted the department to make this provision in the direction of conservative dental treatment, one would only be doing a service to the nation in calling attention to the utter inadequacy of the provision, and to the consequent waste of the necessary expense of that provision.

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*The latest blue books to which I have had access are those published in 1884, which contain the Army Medical Report for 1882.

First with regard to the materials provided: each case contains half an ounce of "silver" amalgam, a stick of gutta percha, and, still more wonderful to relate, four sheets of best gold leaf. Supposing that any of you dental practitioners were called upon to operate for one of our soldiers with the army equipment, what sort of gold filling would even the cleverest operator amongst you be able to make with the series of instruments which are officially described as :

Scalers and stoppers (4).
Excavators and roseheads (3).

If you, with your slowly and industriously acquired skill would make but a poor exhibition with such a beggarly equipment at your command, is it not senseless to expect the unfortunate army medical surgeon, who has probably never received any dental training whatever, to do efficient work. That such an equipment should be seldom if ever used is evident from the constitution of the case. No army returns of fillings or extractions are made, but I have good reason to believe that these cases are seldom returned to the central bureau for the replacement of the materials, whereas the extracting cases are returned for repairs. Some person unknown, and who deserves to be for ever unknown, is responsible for the constitution of this case, and such an embodiment of professional ignorance of the elemental necessities of the provision is so great, that, for the honour and the credit of the department, it were better to erase completely appendix 24 from the Army Medical Regulations, unless it be reformed and extended to a considerable extent. I fearlessly appeal to any intelligent member of the department if he would like the equipments provided for other sections of the service to be judged on the level of that dental equipment. Within the Army Medical Service itself there exist certain members who, having taken the diploma in dental surgery, are surely qualified to advise the department on such matters ; but if in any way departmental etiquette, or "what not," prevents a reference to these quarters, surely recourse might be had to the professional advice of a civilian expert, or committee of experts. A mouth mirror for examining the teeth, a probe for exploring cavities, and a pair of tweezers or pliers, for the application of dressings—surely the first three essentials of the very simplest dental equipment—are conspicuous by their absence.

To illustrate the difference between the medical and the dental method of composing a case for the simple treatment of the teeth, see app. F. and J. In appendix J. is a fresh arrangement, inadequate enough in all but the barest necessities in order to bring it within the same insufficient outlay as is made for the present case. Inadequate as it is, it is surely better adapted to meet the requirements than is the present existing case. Need it be added that the suggested case is in no way to be taken as what should constitute even a suitable case for even temporary treatment of diseases of the teeth.

The inadequacy of the instruments provided is, however, thrown into the shade by the distribution of the equipment. It is required by the Army Medical Regulations that at the head quarters of each military district, one of these cases of tooth stopping and scaling instruments will be provided for use throughout the district. It must be placed by the principal medical officer in charge of the district quarter-master, who will be responsible for its safe custody and good condition It will be issued on loan to medical officers in charge of hospitals within the district, on requisition of the principal medical officer, and will be returned when no longer required. When received back from loan, a medical officer and the district quarter-master will at once examine them and report on their condition to the principal medical officer.

Without enquiring as to how a provision of this kind works in the case of foreign commands, let us take one home district as an example. The whole of Scotland forms one military district, the head quarters are at Edinburgh, troops are stationed at Fort George. If a medical officer there desires to treat a soldier's teeth conservatively, he must send a requisition to the principal medical officer at Edinburgh, who would instruct the district quarter-master to forward him the case on loan.

Is it possible to suppose that, with a provision of this cumbersome nature, the soldier receives the benefit of "the improved modes of treatment, now all but universally adopted in civil life," which the department from their own publications seem desirous should be afforded to him? App. B. shows the areas included in the home military districts, from which the distribution of the case of tooth stopping and scaling instruments, which is bad enough in a country where civil dental practitioners are at hand, can be seen; but abroad matters must be so much worse that surprise can only be expressed that influential officers, who must have suffered when cut off from access to a dental practitioner, have not called attention to this important matter.

A reference to the communication received from the Surgeon-General of the United States Army shows that, while the provision there made is admittedly inadequate, how much more intelligent is the organisation of the equipment for the arrest of caries by excision and filling than exists in our own Army Medical Department (see app. H.)

At each station hospital, the equipment of surgical instruments includes a case of tooth extracting instruments (see app. F.), while each medical officer in charge of troops in barracks, or on board a troop-ship, is provided with a pouch of instruments (see app. 26, F.) The distribution of the extracting case so far seems adequate, and we can even trace the distribution into the field (see app. F., par. 780, 781). With regard to the contents of the cases, many of the instruments are ill-adapted to their purpose, and some provision should be made for their periodical revision every few years. Recently we saw a pair of antiquated forceps, bearing the mark of one of the King Georges, and other instruments of an impossible description, which till the other day formed part of the Army equipment. In a recently added case I saw one pair of forceps which, from the arrangement of the beaks, seem better arranged for snapping off the crown than extracting the tooth, so much so that I would dread to use the instrument. These forceps and instruments are nearly always supplied by the surgical instrument makers, and not by the makers of dental instruments, which may *partly* explain the defects of the equipments. All such cases should surely pass through the hands of an expert in dental requirements before being distributed.

Another point to be noted in these equipments is the absence of examination instruments, in the shape of the mouth mirror and the probe.

The provision of two completely handled elevators, would be preferable to six elevators fitting one handle. The tooth key with its three claws seems universal. Rightly or wrongly, it is an instrument I have never used or even seen used, therefore I do not feel competent to enlarge on its merits or its demerits. With regard to the field equipment, one case contains two pairs of forceps, the other four pairs. I am indeed curious to know what two and what four pairs have been selected. It would surely be possible to leave out the ever present tooth key and substitute more forceps without increasing greatly the bulk and weight of the equipment.

In app. M. will be found a table, showing the number of applicants for admission to the army refused in consequence of defective teeth, in the Recruiting Station where my examination was conducted. This table does not include the much larger number of men with defective teeth who are refused for other causes. Doubtless a large number of those found in these tables are men who, the Inspecting Medical Officer has reason to believe, have falsely represented their age, as these over-statements of age are not infrequently apparent from the extreme deficiency of the dental armature.

Mr. Gaddes seems to think that the examination of the teeth of recruits would be better effected if the medical officer who is the examiner, had the benefit of special dental instruction and experience. That may be so, but I can testify to the fact from experience in the examination-room of a Recruiting Station, that the medical officer is quite adequate to make this dental examination, and his refusals on the score of defective teeth would be endorsed by any dental practitioner.

I have lately been examining the mouths of the young men who present themselves in London for service in the army. I found that there were only four out of the first hundred presenting themselves, who had a truly perfect denture, and of these two were rejected as being under chest measurement.

A reference to the table (app. N.) shows that each man on the average has lost 1.05, or would be the better of losing 2.31 teeth, together 3.36, and 4.09 carious teeth capable of preservation by conservative means, giving a total average of defective teeth per man of 7.45. There were 64 cases per cent. in which scaling was badly required, while 70 per cent. were suffering from inflamed and ulcerated gums, and 27 cases per cent. from chronic abscess, many of them in front teeth. This deplorable state of affairs is serious enough, but it has its element of consolation in the fact that only 8 per cent. of these cases were such as were beyond the limits of remedial treatment of conservative dental surgery, while 31 per cent, might have been easily made efficient with a small expenditure of time. Two of the boys examined came from the Royal Military Asylum, and both showed the necessity of dental appointment being made there. As the army is largely recruited from that school I was anxious to examine them, but so far have not obtained the necessary permission.

The national importance of an early attention to the teeth is surely evident from a consideration of this table, more especially when we remember that this in no way represents the actual state of the mouth of the average Londoner, inasmuch as the recruiting sergeant, who is familiar with the standard of physique and general health required by the medical examiners of recruits, must have exercised some discretion in eliminating all those he was certain had no chance of passing this examination.

From this table, which includes all the applicants for admission, we may take it that, roughly speaking of the 60 per cent. of those admitted, nearly 98 per cent. would be benefited by conservative dental treatment on admission to the ranks.

As the result of a careful observation of the mouths of these men, I am certain that the health and efficiency of the individual units of our army, would be greatly promoted by the examination and treatment of the teeth of the accepted recruits,immediately on their being drafted into the rankof their respective regiments. Were this done and followed up by a compulsory semi-annual examination of the mouth the inefficiency or unfitness of the soldier for militaryservice could rarely be assigned to a defective condition of the teeth as a direct cause.

The existence of a special equipment designed for the preservation of the teeth, no matter how inadequate it may be in the opinion of the dental practitioner, must be a direct recognition of an existing want. Surely something more is required than the mere provision of the necessary materials and instruments, viz., some knowledge and training in the treatment of the diseases of the teeth, and the use of dental instruments. Dental surgery enters into no part of the special training at Netley, required by the Army Medical Department, nor is it generally included in the medical training of the candidate before entering the service.

There are two obvious methods of making such a provision, neither of which has been adopted. The first is the suggestion made by Mr. Gaddes in his paper, viz.. that a systematic course of lectures and of operative work be included in the subjects of study at the Army Medical School at Netley.

The second plan would be that of requiring the army medical candidates to produce a certificate of having attended such a special course of dental lectures with clinical dental experience, and to pass a written and practical examination in dental surgery. Either of these courses would be satisfactory. The former plan is the one most likely to recommend itself to the dental practitioner, but the department have a very good answer to this contention. The object of the special course of instruction at the Army Medical School at Netley, is to instruct the surgeons on probation in all medical, surgical and hygienic matters peculiar to military life. It could not be contended for a moment that the dental instruction we advocate has in it anything specially of a military nature. The department may therefore fairly argue that it is not their province to provide this instruction, but that of the medical schools. Inasmuch as it is an undoubted fact, that the ordinary medical student receives no instruction such as we have indicated as being necessary for graduation, the corollary of the refusal on the part of the department to provide the dental instruction, is the enforcement of the institution of such a course in the medical schools, by exacting a knowledge of the general principles of dental diseases with clinical experience from the Army Medical candidates. We are strongly of opinion that it would be to the interest of the public that such a dental course as we have indicated should be made compulsory on all candidates for the medical profession, if only for one reason, viz., that as a matter of fact, the ordinary medical practitioner is responsible for such attention to teeth as one gets in the first years of his life, he being in fact the first family dentist. The adoption, therefore, of the second plan we have suggested would be a powerful lever for bringing about that end ; and besides achieving the object the department has in view, it would be the means of achieving incalculable benefits to the public at large, because of the general lack of knowledge on the part of the medical practitioner of diseases of the teeth.

There is, however, a third plan which might be adopted by the department, and which, we think, has much to recommend it. The education of the Army Surgeon is not considered complete on his passing the final examination at the Army Medical School at Netley, and an examination has been instituted "to test the progress and proficiency of the surgeon in all those branches of knowledge which are essential to his continued efficiency as a medical officer, and may be taken any time between his fifth and tenth year of service." The necessary fees incurred are defrayed by the department.

A reference to Appendix F. shows the subjects embraced by this examination, and I would propose the addition of the following clause in section 2 :—

(*b**) Dental surgery, operative and practical.

Also that another section be added between 3 and 4, viz.

> A certificate will be required from a recognised teacher of dental surgery in any medical school at home or abroad in which dental surgery is taught, or in any recognised dental school, making the necessary provision, showing that the medical officer has attended a special course of at least twenty lectures on dental surgery, and has gone satisfactorily through a complete course of clinical instruction of not less than three months, during the period within which the examination must be taken, and that he is a competent operator.

We would also propose a further amendment, viz. :—

> 5. That any medical officer possessing any dental qualification recognised by the General Medical Council will be exempted from examination in dental surgery.

The fact, as mentioned by Mr. Gaddes, that members of the Army Medical Service wishing to improve their knowledge and skill in dentistry, have attended the special course of instruction at certain of the dental schools, and have qualified themselves, in some instances, by taking their diploma in dental surgery; and though these are very exceptional instances, they indicate the feeling of want of knowledge in dental matters, which is truly the general feeling of the Army Medical Service.

If one or other of these plans were adopted by the department, and the present inadequate case of tooth stopping and scaling instruments as reformed and improved, were to be supplied to the army to the same extent as a case of tooth instruments,* viz., at each station hospital, something like a reasonable provision would be made for at least temporarily relieving the suffering soldier of dental diseases conservatively.

It may be taken for granted, however, that the Army Medical Surgeon has his time pretty fully occupied, and he could not be expected to do more than merely relieve pain by temporary expedients.

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* A good arrangement would be a combined tooth stopping and extracting case, as suggested in app. F.

In order to place the soldier in the fullest state of dental fitness, it would be necessary to replace the tooth stopping and scaling instrument case at head quarters, by the provision in each military district of an equipment of dental instruments, appliances, and materials, such as we find to-day in any well-equipped dental surgery, under the direction of an army dental surgeon, who would be required to hold the L.D.S. diploma, and to make monthly and annual returns of the diseases treated on Army forms, as is required for other cases of sickness, under the statistical regulations of the "Army Medical Regulations." In fact, we propose a similar arrangement, so far as completeness of equipment is concerned, to that already existing in the Naval Academy at Annapolis, in the United States (see app. I.).

It would naturally take some considerable time to develop such a scheme of dental organisation within the department, and the question might well be mooted, if it would not be well for the department to make a series of purely dental appointments for the meantime. If this were done, these establishments might be utilised as probably the most convenient and accessible schools of dental instruction of the ordinary Army Medical Surgeon in that special course of dental surgery which we think necessary to his fullest efficiency.

If, during times of peace, both officers and men were required to provide a certificate of having had the state of their mouth and teeth certified as sound, at one of these military district dental hospitals, there would be little fear of their efficiency as soldiers being impaired by any serious dental affections when engaged in active service in the field, which could not be relieved by temporary expedients from the tooth stopping case, to be supplied alongside with the tooth extracting case in the field store waggon.

The necessity of dental appointments in the army has occupied the attention of our *confreres* in America, and in August, 1861, the American Dental Convention appointed a committee. This committee conferred with Surgeon-General W. A. Hammond, and the matter was very favourably received by him. No positive action was taken until 1868, when a Bill, authorising the appointment of dentists in the Army and Navy, was drafted and presented before both houses of congress, which was referred to a committee on Naval and Military affairs, by whom no decided steps were taken. A second Bill was introduced, advocating dental appointments at the United States Naval and Military Academies, when the subject was again referred to the committee. The present Surgeon-General of the United States Army has kindly informed me, "That no general provision has been made by this government for providing the services of experienced dentists for our troops. The military academy at West Point has a regular dentist on duty, and it is believed that such is the case at the naval academy at Annapolis. In the army there are several accomplished practical dentists in the corps of hospital stewards, but these are exceptions to the rule. The medical department of the army has tried to arouse interest among medical officers in the matter of the care and treatment of the teeth, by furnishing such instruments as are needed on requisition. The dental cases in the supply list for issue, consist of an extracting case, and a small case for making excavations and temporary fillings. These latter are supplied only to frontier posts, where it is not practical to obtain the services of a dentist. . . . . Congress has been appealed to on several occasions to authorise the employment of dentists, but, so far, has taken no definite action. It is probable, however, that, in time, proper provision will be made in this necessary and valuable branch."

With regard to our own army medical department, the two points on which we are desirous of insisting are the necessity of, firstly, the reform and the extension of the present dental equipment ; and secondly, the systematic instruction, by lectures and operative work, of every medical officer. This instruction will enable him to know when and where the resort should be had to the services of a more highly-trained expert, and, in the meantime, to intelligently relieve, temporarily at least, all acute suffering from diseases of the teeth.

In order, however, to introduce into military medical practice all the improved modes of treatment now adopted in civil life, it would be necessary to appoint a restricted number of medical officers possessing a recognised qualification in dental surgery, whose duty it would be to devote all their time and attention to the more permanent care and preservation of the soldiers' dental armament.

The specially mechanically trained skill of these latter would enable them to treat certain cases more effectively than the ordinary surgeon, no matter how highly qualified—as, for instance, the treatment of fractured jaws, and the prosthetic treatment of gun-shot wounds in the neighbourhood of the mouth.

The next department of the State to which I should like to call your attention, will naturally be that of the Royal Navy. Since beginning these investigations, I find that to undertake them thoroughly, has proved much more onerous a matter than I had supposed ; that is to say, if the work is to be completely done. Although in the navy the Medical Department is constituted very much upon the same lines as the Army Medical Department, there are many conditions so entirely different, that I shall have to reserve a thorough and more exhaustive paper to the next meeting of our Association. In the meanwhile, I must satisfy myself by mentioning a few generalities.

The age of those entering the navy, 15 to 16½ years, differs widely from those entering the army, 17 to 25. The short service system, too, now adopted in the army, has not been extended to the navy. The young sailor undergoes a period of training until the age of 18 years, when his period of service begins to count. After twelve years' service, when he is 30 years of age, if his character is good, and if he cares to remain, he can re-enter the service for the further term of nine years.

The recruiting examination, so far as the condition of the teeth is concerned, is infinitely more strict for the navy than the same examination for the army. From the well-known valedictory address of Mr. Spence Bate, as President of the Odontological Society, it would appear that the regulations published by the department are, perhaps, unnecessarily strict, or, at any rate, injudicious ; but a similar series of statistics of examination of recruits by a competent dental practitioner, such as I have made for the army, would throw considerable light on the matter, and I hope to have the opportunity of making that examination before the next meeting. In consequence of this stringency of the dental part of the entrance examination, the impression may be created in the department that there is little necessity of making any provision for the conservative treatment of the teeth of the sailor ; but, knowing as we do, from M. Magitot's table, that the age of from 20 to 30 years is just the period in which dental disease most frequently requires treatment, it is impossible to suppose that out of the total force of 43,475 officers and men, that diseases of the mouth and teeth are unknown. In a short conversation with a long service man, now engaged in recruiting, he informed me that acute suffering from the teeth was not at all an uncommon occurrence on board ship; that, so far as he knew, extraction was the only treatment, and he had never known of a sailor having had a tooth stopped except by a civilian practitioner, for which he paid. He himself had lost nine teeth in his period of service; two had been extracted by the naval surgeon, the other seven had been extracted by the sick berth steward (and, judging from the excellent quality of his remaining teeth, he might probably have had a full dental armature, had he had the benefit of timely remedial treatment). In fact, the sick berth steward seems to be the analogue of the hospital sergeant in the army, in so far as the extraction of teeth is concerned, as well as in other matters.

The re-constitution of the sick berth staff of the Navy is quite recent. A course of instruction at Haslar is required, which includes instruction in elementary anatomy, in bandaging and dressing, and also includes exercises in "First Aid to the wounded." The junior medical officers of the hospital are appointed to give this instruction, for which they receive a small addition to their pay, such as is allowed to a medical officer of the same rank for assisting in the medical course.

The naval surgeon undergoes a period of training at the Royal Hospital, Haslar, and so far as I have been able to learn, there is the same lack of knowledge of dental diseases on the part of the Naval surgeons as exist in the Army Medical Department. When afloat, the Naval surgeon has to provide all his instruments, which includes a case of extracting instruments. Ashore, the department provides instruments, but, as there are no regularly published Medical Regulations containing details of equipments as in the Army, we can say nothing of the dental equipments, except that no tooth stopping case is provided.

One of the principal acting surgeons of the United States Navy writes to me as follows:—"The medical department of the navy furnishes ships of the Navy with a 'Dental case,' containing eight forceps for extraction, two elevators and a lancet, no instruments for filling teeth. A ‘Dental Surgeon’ is attached to the Naval Academy, whose duty it is to attend to the teeth of the Naval cadets. He has an office in the hospital building, and has all the instruments and modern appliances American dentists require, probably more than they require. The cadets pay for material used in filling teeth only, the services of the dentist they get gratis. He formerly had the rank and pay of an assistant surgeon, ‘acting.’ When this rate was abolished by Act of Congress, he was specially legislated for. His pay is now sixteen hundred dollars a year. Not bad considering the time required to do his work. Various bills have been introduced into Congress, the object of which was the appointment of dentists in the Navy, but none have been adopted as yet. I opine it will only be a matter of time, though, when dentists will be admitted into the Navy. Their services are certainly required by men and officers. I had a practical dentist with me as ‘apothecary’ on my last ship I served on. He did a great deal of dental work, for which he was paid by those on whom he operated. Naval medical officers do not know anything about the practical work of dentistry, as far as my experience goes. As it is, we exclude those whose teeth are bad from the Navy, doing away with the necessity of doing work of this kind.”

Recognising, as we must, that diseases of the teeth are one of the primary causes of other diseases in the system, I have prepared a table of returns of diseases of the digestive system in the army (see app. D. and E.), and by so doing we are enabled to compare them with a somewhat similar return made in the navy. It is only reasonable to suppose that a certain unknown proportion of these diseases of the digestive system have their origin in a diseased condition of the teeth, and while it is utterly impossible to arrive at any calculation as to the amount of that proportion, we might reasonably expect that, as the sailor starts with a more efficient dental armature than the soldier, that the return of the diseases of the digestive system should contrast favourably with the same return from the army. A reference to app. E., in which the ratio per thousand of the strength for the same period of ten years gives us favourable statistical results in favour of this contention, even if a liberal allowance is made for other important factors, such as a lesser exposure to the evil effects of alcoholism. (*To be continued.*)

COMPULSORY ATTENTION TO THE TEETH OF CHILDREN (THE ARMY AND NAVY.)

(*Concluded*).

By William McP. Fisher, L.D.S. Eng.

Board Schools.—I am now face to face with the class of schools which contain the bulk of the children that go to form the population of this couutry. These children differ from the foregoing in that they are not under direct medical supervision beyond that of the local medical officers under the Public Health Acts, of whom there is quite an army in our country.

Scotland, with an estimated population of nearly 4,000,000 for 1884, had 684,467 children, with only 561,927 on its school registers.

England and Wales, with an estimated population for 1884 of 27,132,449, had on the registers of its public inspected schools 4,337,321 children ranging from three to fourteen years of age. These schools earn on an average about 17s. per scholar of a Government grant on passing certain educational standards. Since the passing of the Education Acts in 1872 and 1876 about £5 has been spent on school accommodation for each child in this country alone, not to mention the millions on education.

I draw your attention to these facts simply to endeavour to show you what interest the State takes in upholding the mental calibre of the rising generations, and to illustrate, from the somewhat lavish expenditure on education, the necessity of a judicious expenditure in upholding weakened and impaired physical structures in our rising youth. Other nations are not dead to this question, as witness the following: "The Minister of Education in France some years ago forbade the use of cigars and tobaccos by the scholars attending the schools and colleges through the whole kingdom," simply because it was deleterious to the rising physical stock. It used to be the habit in some of the London Board Schools that the children met ten minutes before 9 a.m., so that their hands and faces might be examined for cleanliness. In the same spirit, and with the same motive, I would have them taught to keep the inside of the face equal with its surface. The parents of the scholars attending the elementary schools take little or no interest in the mouths of their children, and the result is we have disease tolerated in the mouth that would be tolerated nowhere else, with the result that many children go off their food, as they fear the process of chewing. Now, this is entirely against the spirit of modern medical treatment, and it is this I seek to remedy in asking for compulsory attention to the teeth of school children. I have nothing new to propose in the methods of enforcing this attention beyond what I brought before your last annual meeting, and that was, in the main, that whoever has the educating of the child ought to be held as criminally guilty before the law in neglecting any of his physical structure as well as his educational career.

In corresponding with a dental practitioner of Leeds on this subject, he informed me that 90 per cent. of the teeth were bad in that town. If such conditions exist, there must be a large waste of human life, not ending in death probably, though often with far-reaching, ill effects on life, with a vast quantity of needless suffering, which, if regarded as such, would be matter for indignant human protest.

At one of our recent parliamentary campaigns, an elector asked the candidate—"If education becomes free, would you make it compulsory to have a qualified dentist appointed to examine the children's teeth?"

The Candidate replied—"That is not such a laughing matter. The subject has been seriously considered in America, and arrangements have been made in boroughs or States to have the children's teeth examined by qualified dentists. Some little time ago, an item of news to that effect appeared in our newspapers, which originated from the Board of Education of Chicago having granted permission to the Chicago Dental Society to examine the teeth of public school children for a period of six weeks, commencing about September 15th, 1886. The results of such examination will be tabulated and published in due time."

The question comes to be asked, gentlemen, if we as a profession are agreed as to the advisability and practicability of "compulsory attention to the teeth of school children" as being the best method for serving the public in arresting the diffusion of tooth decay; and, if so, How are we to set about its introduction? Until some such method as this is employed to teach the masses the value of these organs, with the necessary hygienic measures for their preservation, I am afraid tooth disease and decay, with all its attendant pains, will ever fall with immense over-proportion upon the most helpless classes of the community—upon the poor the ignorant, the subordinate, and the immature; upon classes which in great part through want of knowledge, and in great part because of their dependent condition, they cannot effectually remonstrate for themselves against the miseries brought upon them. It is these circumstances which have the strongest claim on us, with the whole medical profession, to endeavour to lessen disease and pain, and the duty of the Public Health section of our legislature to enforce individual sanitation where it has relation to human life.*

A PETRIFIED mammoth tooth has been fonnd near Helena, Montana Territory.—The tooth is a fine specimen of petrifaction and a veritable monster. Others, says *Items of Interest*, have been found in past years in this vicinity, but none as large as this. It is a molar, will weigh eight or ten pounds. It is seven inches high, three and a half thick, and has a grinding surface of nearly eighteen square inches, its face being five inches long by three and a half wide. The roots and marks of its connection with the jaw are plainly visible, and the bony structure of the grinding surface is still discernable, notwithstanding the countless ages that have elapsed since it was engaged in munching the primeval bunch grass on the eternal hills.

NECROSIS OF THE LOWER JAW DUE TO PHOSPHORUS.—The dangers of taking phosphorus as an internal remedy when the teeth are defective, are hardly even realised, or at least guarded against. This is strikingly demonstrated by the following case, reported by Mr. Hutchinson, at the Clinical Society of London, which possesses features worthy of mention. The patient, a lady of forty-five, after taking pills containing 1-33 grains of phosphorus t. i. d. for two years, consulted Mr. Hutchinson for necrosis. In this case, as in all others on record, carious teeth were found to exist.

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*Copies of this, and last year's may be had for circulation from J. P. Matthew & Co., Publishers, Cowgate, and Dundee

British Journal of Dental Science.

LONDON, JANUARY 1, 1887.

DENTAL PREVENTIVE MEDICINE.

The medical side of dentistry is too much neglected. The prosthetic, restorative, operative aspect of Dental Science each and all are zealously studied and earnestly taught. While one lecturer possesses a bias in this direction, another in that, his instruction is sure to be tinged by the tendency of his mind, and it is seldom that the less stirring details of medicine, as involved in the consideration of dental ailments, attract as much as the more striking surgical or prosthetic sides of dentistry. In a practical age, men turn their attention more and more to the matters which crop up in the daily routine of workaday practice, and find these ample to engross the time and energies which they are willing to give to their profession. The evenings and leisure of busy practitioners are, as a rule, kept as much as possible out of the rut of professional cares ; for so arduous and taxing is the daily task, that urgent need of mental relaxation and calm is felt and sought after. There are, however, very many most important aspects involved in the medicine of dentistry which all skilled dentists should know and should be taught. In formal lectures to medical students, few references are made to subjects of especial interest to dental students, while Dental Medicine, as a special subject, is not deemed in this country worthy of having formal lectures at all, at least, none which can be taken as comprehensive of the subject. Again, in the literature which floods our shelves we have to select American mannals if we desire special teaching in Dental Medicine—a very unsatisfactory condition of things, as it leads to the absurd distinction so often made between American dentistry and English dentistry. However, one branch of Dental Medicine seems likely to be made more of than the rest ; we refer to the Preventive Medicine of the teeth. State Medicine, Preventive Medicine, Sanitation and Hygiene are phrases more or less implying the science which teaches us how to avoid the ravages of disease, to discover what are the laws of health and what of disease ; State Medicine recognises that prevention is better than cure, and at the same time acts upon the sound basis of supposing that every effect must in every case follow some well-defined cause, obscure it may be, but still discoverable and remediable. And dentistry dealing with a part of the body has the most vital importance when regarded as a branch of State Medicine. In this connection it is capable of division into two convenient headings, (*a*) when it relates to the community at large ; (*b*) when it has reference to the individual members of the community. We propose to confine our attention to the first of these sub-divisions State interference in the health of the masses is practically the outcome of the last few years, and the outcry for sanitation which has aroused the minds of thoughtful men, have of late been re-echoing throughout the dental world. In a series of articles in this Journal, the subjects of State intervention for the better attention to the teeth of the masses and the study of personal hygiene of the teeth, have been fully discussed ; and in the present issue we complete one of the most important papers yet written upon the subject of State protection of the teeth of children under its immediate charge. Mr. Mac.Pherson Fisher has done a most marked service in collecting the facts recorded in his paper, and in marshalling. them so as to render the conclusions irrefragable. The State, in its position as *locum parentis* is bound to see to the teeth of the thousands of children who are utterly and entirely in its hands, to foster and convert into useful citizens, or to starve and neglect into habitual criminals. All thoughtful men recognise that among the improvident classes in which personal attractiveness is seldom studied, the teeth are allowed to fall into the most baneful condition, and ere long the digestive powers become lessened, and with the appearance of that protean monster Indigestion, all the evils which assail body and mind accrue. One of the exciting causes of the addiction to strong drinks which confessedly is the curse of our country and its lower orders, is the inability to masticate solid foods. The victim of bad teeth incapable of taking due sustenance in meat and bread craves for the temporary exhilaration and satisfaction obtainable from alcohol, and soon pays the penalty. This cannot be laid solely to the door o State neglect, but it is mainly so, for, as Mr. Fisher points out, children's teeth are neither cared for, nor are the parents in any way apprised of the important part their teeth have to play in the children's after welfare.

The diseased teeth of childhood, the neglect of personal hygiene among school children and their repugnance to dental intervention, born of ignorance and rough handling by some unskilled medical man in his attempts to remove teeth, all lead to the most disastrous dental conditions in the adult. Dr. Cunningham, in a thoughtful paper, deals with another branch of State Medicine, namely, the due supervision of the teeth of men engaged in the services. It will be remembered that at the Medical Congress in London, Mr. Gaddes trenched on much the same ground. We have ourselves pointed out how largely the well-being of a community, indeed of a nation, depends upon the condition of the teeth of the individuals who go to form the nation itself. It is therefore incontestibly of the first importance to insist upon dental supervision alike of all children under state control whether as school children, or as *employés* in State offices, and of adults who come under the State's inspection from their occupations. We are glad to see the lay press have recognised the necessity of adverting to this matter, and we trust that ere long we may find some definite steps have been taken to reform the present unsatisfactory state of affairs, to replace the present neglect by vigilance and the existing inertness by an actively worthy of so highly an important a matter, concerning as it does the State and the Community at large.

A Compliment to English Dentists.—Sir Edwin Saunders, F.R.C.S., has, we understand, been elected an honorary member by the Odontological Society of New York.

We see that Mr. J. Bland Sutton's name is proposed for election to the Council of the Pathological Society of London.

Puffing in Dental Journals.—It is a sad tendency among the degenerate sons of Adam to give a fillip to the sale of a friendly firm when occasion arises. Even dentists are not free from this vice. Sometimes the thing is done nicely and neatly, and the effect is so pretty that one has to confess a wee bit of admiration, even though we abhor the practice. Sometimes it is done roughly and clumsily; for example, Mr. B., we will say, writes and says he cannot get instruments he wants in a certain place, and, being righteously enraged at the want of progressiveness in his own country, he tries elsewhere, and is delighted to find Messrs. Somebody, of Somewhere, a long way off, make his things very nicely. This is all very well, but we wonder that Mr. Editor does not suppress what is really nothing more nor less than a puff—we dare say unintentional—for Messrs. Somebody; and it is not quite up to the high level of English Dental etiquette.

Students' Dental Societies.—We are glad to find these Societies are upon the increase; there can be no doubt of their very great utility in fostering professional interests, and by encouraging emulation among the students. Many a successful man acknowledges that he owes much of the success of life to experience gained at Students' Societies. They teach a man how to treat his fellow-men, how to keep his head and his temper, and are, if properly managed, valuable in every way. We are glad to hear that the Students' Society of Edinburgh, which was founded last year, has thriven well, and has attained a good muster-roll of members. The kindred Society just floated in Birmingham will, we hope, prove equally fortunate.

Cases of Sarcomata Affecting the Palate.—Recently, before the Pathological Society of London, Mr. Treves exhibited a specimen of Primary Melanotic Tumour of the Hard Palate from a woman aged fifty-eight, who was almost edentulous, and who for four years had worn a "a false palate," which irritated the front and right side of the palate near the alveolus. In this region a tumour at first appeared of the size of a pea, but rapidly grew. When first seen, it was a flat swelling, covered by natural mucous membrane, but very black, or rather mottled, in appearance. There was severe pain. With chisel and mallet, the portion of hard palate containing the tumour was successfully removed. It was a large spindle-celled sarcoma growing from the periosteum; recurrence of the growth took place after some months. The mucous membrane of the mouth of lower animals was much pigmented, and the present almost, if not quite, unique case seemed to indicate a reversion to a lower type. Mr. Bowlby (for Mr. Stephen Paget) showed Tumours of the Soft Palate: one from a man aged sixty; it easily shelled out, was well encapsuled, was a mixed-celled sarcoma, and contained embryonic muscular fibres, and also tubular glands. The second tumour had a hyaline matrix, with embryonic cells and incipient tubular glands.

The Dental Profession Abroad.—According to the *Independent Practitioner*, in Austria and Hungary there are no dentists, medical men alone being allowed to practise dentistry. Before the year 1876, in order to practise dentistry in Holland, it was necessary to hold the diploma of medicine, surgery, and midwifery. The law has now been amended, a special course of study and special examinations having been provided for, as in Germany, Russia, and Switzerland.

A New "Cultivation Medium."—Dr. Edington, the assistant to Professor Chiene, of Edinburgh, has experimented upon a new medium for growing micro-organisms. He gives the following particulars in the *Journal of the Dental Asso-*

ciation :—Two ounces of the finest selected Irish moss are macerated over night in eighteen ounces of water in a beaker; then, in the morning, it is placed in the steam steriliser, and kept at the boiling point of water for the period of an hour and a-half, being well stirred up occasionally. At the end of this time it is strained through a flannel, or (preferably) felt bag, two or three times, when it is found to be fairly bright. As a considerable quantity of refuse matter remains in the bag, the quantity of material derived from the moss and represented in the jelly must be considerably smaller than the actual weight of moss used. The jelly so obtained will be found, on cooling, merely to gelatinise, and yet one finds it to withstand a temperature of 31° C. before liquefying; but if it be evaporated to ten ounces, it is found to be capable of being exposed to a temperature between 50° and 55° C. before liquefying. In this state, if a test-tube be filled with it, it is found to present the appearance of water with only a slight degree of haziness. In order to render this more nutritious, and so better fitted for the requirements of the growth of the generality of micro-organisms, I add to it the materials recommended by Dr. Klein—namely, beef peptone and ordinary cane sugar. If we add to the jelly 2 per cent. of the former and 1 per cent. of the latter, the result is a jelly almost as bright as nutrient gelatine, and infinitely more so than agar, while the simple method of preparation and the price (Irish moss is about one shilling per pound) have much to recommend it.

A CURIOUS CASE.—In the latter part of September, we, says the Editor of the *Dental Register*, extracted for a woman of about twenty-eight years of age, a supernumerary tooth occupying part of the space left after the extraction, some years ago, of the second superior right molar. The first and third molars are *in situ*. The supernumerary is shaped very much like a bicuspid, though smaller. A few days before this case was seen, another presented itself, though of a different order. A woman of about the same age, both nearly, if not, quite six feet in height, of fine physique and robust health (from Indiana), consulted the writer in regard to some fillings. The anomaly consisted in a pair of well-shaped bicuspids, in place of the superior lateral incisors. Their position in the arch is in regular line with the other teeth, one cusp on the labial aspect, the other and smaller, on the lingual. The fissure and pits in the crown were those of an apparently normal bicuspid. We wished to take an impression of the mouth, but the lady would not consent.

PREPARATION TO RELIEVE THE PAIN OF ERUPTING THE WISDOM TEETH.—Dr. Delioux de Savegrione recommended the following mixture for local application :—

Glycerole of Starch	150 grains
Borax	15 ,,
Powdered Saffron	7½ ,,
Tincture of Myrol	10 drops

A NEW ANÆSTHETIC.—Drumine is the title of a new Australian local anæsthetic discovered and described by Dr. John Reid, of Port Germein, South Australia. Euphorbia Drummondii is the species from the milky juice of which the alkaloid drumine was prepared. Cocaine is known to have a mixed action on sensory and motor nerves, and causes preliminary excitement ; whilst drumine is said to have an almost purely sensory paralysing effect, and does not cause excitement. Experiments were made on cats, and on the observer's tongue. It was injected into the legs of the former animals, and caused general dulness, with marked impairment apparently of all forms of sensibility. Placed on the tongue, nostrils and hand of the observer, the resulting anæsthesia was most marked. The alkaloid has no action on the pupil, and small doses given internally produce no constitutional effect. It has been employed successfully in subcutaneous injections for sciatica and sprains. The experimentation has so far been imperfect and incomplete. "We hope soon, says the *Lancet*, to have a fuller account of this new alkaloid, and to be able to give further information thereon." The amount injected subcutaneously was four minims of a 4 per cent. solution. Dr. Reid anticipates a brilliant future for the drug in the domain of nervous and cerebral diseases.

EULYPTOL, AN ANTISEPTIC.—Schmeltz, according to the *Bulletin de Therapeutique*, combines six parts of salicylic acid with one part each of carbolic acid and essence of eucalyptus. He believes a real combination takes place, as tests reveal no carbolic acid in the resulting substance, which he calls eulyptol. At first he employed it for surgical antisepsis, remarking, as one of its advantages, that it did not form in the wound insoluble albuminates, as other antiseptics with a metallic base, which destroy their antiseptic actions.

SWALLOWING A SET OF ARTIFICIAL TEETH.—"A remarkable surgical operation was performed at the Massachusetts General Hospital, by Dr. Maurice H. Richardson, of Boston. About a year ago John McCarthy swallowed a set of artificial teeth. The passage of food to the stomach was almost wholly prevented, the patient grew emaciated and weak, and it became evident that unless relief was had, he must soon die. Dr. Richardson made a transverse cut in the left side of the abdomen, through which the man's stomach was drawn out and then cut open, when, by the insertion of his arm to the elbow, Dr. Richardson was able to reach and remove the teeth. The internal opening was then closed with fine silk, and the stomach replaced, the external cut being closed with stitches. The whole operation was completed in forty-five minutes. The patient is doing well, and his complete recovery is now considered little less than certain."

THE *American Journal of Dental Science*, in relating the above case, would seem to be unfamiliar with the operation of gastrostomy. This procedure has been carried out many times in England, although mainly for occlusion at the cardiac end of the stomach.

CHANCRE OF THE GUM.—Dr. D. N. Kinsman, writing in the *Clevelnnd Medical Gazette*, says :—"I found B. had a swelling of the cervical and sub-maxillary glands on the right side. They were large, hard, painless, and without the adhesions to the surrounding tissues usual in the ordinary cases of adenitis of their duration. In seeking for a cause for their development, I found an ulcer surrounding the right middle incisor, in the upper jaw. This ulcer had been under treatment by a dentist for several days, and by him was supposed to be due to an accumulation of "tartar," which had extended beneath the gum and caused the ulceration. It had been treated with iodine locally. On July 1 he was again seen. The granular swelling was increased, and the glands of the other side of the neck and those in the occipital region were also involved. He had fever and headache ; quinine was given. July 3 he was worse. When seen, the case became clear, for the papular syphilide upon his face, chest, and arms left no possible doubt. He subsequently had nocturnal pains in the head and shins, and pharyngitis and patches upon the tongue. Under specific treatment he did well, and in five weeks the apparent manifestations had disappeared. Three years ago this man was treated for supposed syphilis. This diagnosis seems to have rested upon the occurrence of a sore upon the penis and a consecutive suppurating bubo. He had no secondarus. It was learned that B. was having sexual relations with a young woman who was living at home, and that they had continued for more than a year. In the early part of May, or last of April, this young woman, who, till then, had been free from all sores, had a fissure on her lip, which was cauterised with a pencil of nitrate of silver. This fissure took on the appearance of a broad-based sore—so the young man says—and for some time refused to heal. Finally, the glands in her neck enlarged. She had an eruption, and, upon consulting a physician, the case was diagnosticated syphilis, and accordingly treated, when her symptoms subsided. B. supposed that he had been poisoned when kissing her while her lips were sore, and Dr. Krusman was led to believe, from all I can learn, this woman was contaminated by the pencil of nitrate of silver, which may have been soiled by contact with a chancre on some one else. Such modes of infection are common enough. This case, as well as others, teaches us we cannot be too careful to protect others from contamination by soiled instruments which have been used about syphilitics.

AN AMERICAN OPINION OF MR. FISHER'S GOOD WORK.—The editor of the *Dental Review* says, "We have not heard much lately about the examination of the teeth of school children in the public schools of Chicago. In England, at the late meeting of the British Dental Association, a paper was read on this subject by W. M. Fisher, L.D.S., of Dundee, Scotland, which we consider timely and of great value. How soon will the committee of the Chicago Dental Society go on with the work which was laid out such a long time ago?"

IODOFORM COLLODION FOR NEURALGIA.—The *Medical Brief* recommends iodoform collodion as a remedy for neuralgia. One part of iodoform in fifteen per cent. collodion is used, several coatings being applied with a camel's hair pencil.

Abstracts of British & Foreign Journals.

AMERICAN JOURNAL OF DENTAL SCIENCE

IMPLANTATION OF TEETH AND PERICEMENTAL LIFE.

By WILLIAM J. YOUNGER, M.D.

TRANSPLANTATION and Implantation have so far realised the most sanguine expectations, and leadto the belief that in a short while they will become as firmly established in professional practice as any other operation requiring skill and judgment.

Dr. Younger states that he has made a discovery that is even more startling than the success of the operation of Implantation itself. In a former paper it was recommended to use cock's combs as a means of preserving the vitality of the peridental membrane, and it was also mentioned that in two instances the life of this membrane had been preserved, for over fifty hours, in tepid water. He further reports a case—one of several—which proves that these means are not at all necessary to preserve the vitality of this, the most wonderful tissue in the human body ; that this vitality of the pericementum is marvellous ; and that it may be as tenacious as that inherent in the seeds of plants.

In March, 1886, Mrs.——brought me a bicuspid that had been extracted at her solicitation, in Sacramento, on the 31st of January, 1885, in the belief that it was the seat of an intense neuralgic pain. This tooth she wanted replanted in her jaw although it had been carried about in her purse for some time ! At first Dr. Younger thought it impossible ; but, just as he had persuaded her of the impossibility of success, he thought of a passage in John Bell's work on the "Anatomy and Physiology of the Human Body," which awoke the suggestion that success in implanting that tooth was, after all, possible.

In criticising an article of the famous John Hunter, Bell says : "How can such vitality exist independently of a circulation ? But there are not wanting examples of an obscure and low degree of life existing in animals' ova, or seeds, for seasons without a circulation ; and if for seasons, why not for a term of life ?"

It had been proved by the author, that the peridental membrane possesses a wonderful tenacity of life, in at least two instances, where, after it had been removed from all life-giving connections for fifty-two hours, it was as vigorous in forming attachments as though it had been planted immediately after removal. He accordingly determined to try the feasibility of the replantation. On the 11th of last March, he drilled a socket between the first left superior bicuspid and first molar ; and, after soaking the tooth in water—temperature 120° Fah. — for twenty-five minutes, to soften the membrane, restored to the jaw that which it had been deprived of just thirteen months and eleven days before.

As the dental aspect of the tooth was perfect, and the approximal not nearly so much so, he turned the tooth, thereby much improving the original appearance of that portion of the mouth. When the operation was finished, the tooth was found so firmly fixed in the socket that retaining ligatures were not applied; and union took place as rapidly and as thoroughly as if it had been a fresh tooth.

The tooth retaining this firmness, and no swelling nor pain ensuing, the lady commenced eating with it, and at the end of twelve days became so careless in her use of the tooth, that she bit a hard crust of French bread with it. This was too much; the tooth received a wrench that loosened it and caused the gum to bleed profusely. Next morning she hurried to the office, and, with tears in her eyes, narrated the accident. The tooth was found quite loose, but not dropping, and the gum on the palatine surface swollen, and with the evidence of having bled at the margin.

The accident was deemed fortunate by the writer, as it was a test of the question whether the retention of the tooth was due simply to the nice adaptation of the walls of the socket to the root of the tooth, and therefore only mechanical, or whether it was really due to awakened life in the peridental membrane, and consequent vital connection with the living environment of gum and alveolar substance. If mechanical, the irritation that has been set up around it, especially in its present loose condition, will cause its expulsion; but if vital, it will be retained and become firm again. No ligature was applied, but the gum was painted with tincture of iodine, and the patient cautioned not to chew on that side. In one week all marks of the accident had passed away; the tooth became again firmly fixed, and remains so. The attempt to pass a delicate instrument, the point of which had been flattened for the purpose, between the gum and the tooth, gave as much pain, and the instrument met with as much resistance, as in the tissues surrounding the teeth that had never been disturbed in their sockets; this proves, Dr. Younger thinks, that the pericementum of that tooth—dry and shriveled as it was—had, during those long months of absence from any life-supporting substance, tossed about from place to place, from pocket and purse to casket and drawer, preserved a vitality as fresh and vigorous as when it was removed from the place in which it grew.

He has since tried implanting teeth which have been extracted for weeks and months, with equal success, proving the wonderful tenacity of life in the peridental membrane.

The question now is: "When does the pericementum die?"

In consequence of these experiments, and the equal success of the implantation of long extracted teeth with that of fresh ones, the warm water and the comb of the cock are discarded as unnecessary. The teeth are laid aside in a clean, cool, dry place.

The flat drill is not, the writer finds, necessary. He employs instead graded trephines for piercing the bone and for doing the major part of the work; finishing the walls, as formerly, with burs of various shapes.

Comparing replantation with transplantation, he says: In replantation, as mostly done, the peridental membrane, the apex of the root and the alveolar process immediately surrounding these, are highly inflamed, in a state of disease, with pus, either already formed or forming, at the end of the root, and the operation is undertaken with the view of relieving or aborting an alveolar abscess. A portion of the diseased apex is then cut off, and the tooth is forced back into the cavity. Here we have a diseased root thrust back into a diseased socket. The disease is not removed; its conditions are simply modified; and while the congestion may subside, and the tooth become comparatively comfortable the disintegration of the root substance—already begun—is likely to continue, and in the course of time the entire root becomes destroyed, or, what is called absorbed; and the bodiless crown drops off. So much for Replantation.

Again, in Transplantation there is a healthy tooth, but it usually replaces an old diseased root, which has been in a diseased socket for years. The diseased root is pulled out, but the disease in the surrounding alveolus is left uncured. But when the new tooth is put in, the vent for the escape of pus gives it an existence in the old tooth, is entirely occluded, and if there be sufficient disease in the alveolus, the retained gases and pus effect the expulsion of the painful elongation of the intruder. If not enough disease is left to do this, then the slow process of erosion is apt to ensue, and the root becomes, in time, absorbed.

In *Implantation we have a healthy root in a healthy socket;* and, therefore, the factors that tend to the destruction of the root in Replantation and Transplantation are not present, and, therefore, not operative in Implantation.

As to the seeming violence to the bony structure of the jaw, he believes that there is no substance in the human body that seems so tolerant of abuse as the alveolar process. Union takes place more readily and kindly, and the teeth become much sooner firm and serviceable in Implantation than in either of the other operations.

Narrating the only case of ill success he had, he says: In this case, the tooth inserted was but poorly covered with pericementum, and the socket had been diseased for eighteen years, and was, moreover, so much larger than the root that the tooth had to be held in by ligatures. The evening after its insertion, the ligature loosened and the tooth fell out and dropped on the carpet. The gentlemen placed it immediately back in the socket, and being unable to tie it, retained it in a position by closing his jaw and keeping his teeth tightly pressed together by means of a handkerchief passed under his chin and tired over his head. At nine o'clock the next morning, it was found that attachment had already taken place, which proved it had not been fatally injured by the episode of the night previous. The ligatures were renewed, and, two months later, the tooth was well attached, though not firm. A letter dated more than a year after the operation stated that the crown had broken off, and he (the patient) was puzzled to know why it should have done so, when he was not cracking nuts with it! He also wrote that the fangs remained embedded; but in this he must be mistaken. It is, in my mind, a case of absorption of the roots.

It is the only case in which Dr. Younger did not either cut out the disease nor treat it sufficiently long to be satisfied that it was all gone from the socket; and it is the only tooth he has lost by absorption. In cases like this, where the size of the socket is in excess of the diameter of the root, either from natural causes or alveolar disease, it is best to form an artificial root of gum shellac, of the shape and a trifle smaller than the body of the root to be inserted; to which is attached an artificial crown. This is inserted into the socket in the direction the new tooth is to occupy, and there given temporary lodgment; by which means the margins of the gums and alveolus are kept from retracting, the socket made healthy, and the framlations allowed to fill the cavity, until there shall be perfect colour with the whole surface of the new tooth, which is then put in.

A PORCELAIN FILLING.

By J. L. Stokes, D.D.S.

A young and handsome lady applied to Dr. Stokes for advice. Her teeth give her much annoyance; some of them were honey-combed on the palatine surface. She asked to have a depression in the labial surface of a central incisor filled; it was a very large cavity through the enamel and even into the dentine. A gold filling large enough to fill the cavity would, it was pointed out by the dentist, be very conspicuous, and so he advised her to let him insert a filling composed principally of porcelain. She consented; an impression of the labial surface of the tooth with modelling compound was taken, and a cast was taken from that; Dr. Stokes then cut in the tooth on the cast, just such an opening as would have to be made in the natural tooth; he then ground up a piece of porcelain from a porcelain tooth exactly the shade of a natural one. In this way he fastened it to a piece of wood with shellac, so that he could hold it; then he cut it to fit loosely in the cavity in the tooth on cast. He allowed a space to remain between the porcelain and the walls of the tooth all around, and then took the patient in hand again, put on the rubber dam, and cut out just such a cavity in natural tooth as was done in the one on the cast; when it was thoroughly prepared he filled it with very thin cement (Monogram) and put the porcelain in and pressed it firmly to the bottom of the cavity; this drove out the cement to a great extent, leaving only enough in the cavity to hold the porcelain in place and fill up any irregularities that might have been left in preparing the cement or porcelain; the cement was then allowed to get hard. With a very fine excavator he removed part of the cement from around the porcelain and started the gold filling. He would fill about one-third of the space at the time, leaving the cement intact to prevent the displacement of the porcelain. He had the cavity counter sunk slightly, and the edge of the porcelain was slightly bevelled, which caused the entire space between the walls of the cavity and the porcelain to be counter sunk, when he completed the circular filling of gold around the porcelain. The gold was condensed very carefully, and when it had been completed the gold overlapped the edges of the porcelain very slightly, but firmly, and ran back into a groove cut all around in the opening in the natural tooth sufficiently to hold the gold itself in place. When it was polished it looked like a thread of gold, or a very small gold ring let into the tooth.

This operation made the already beautiful and attractive young lady even more so.

ARCHIVES OF DENTISTRY.

PREVENTIVE DENTISTRY.

By W. N. Morrison, D.D.S., St. Louis.

Our artificial way of living is largely responsible for the ravages in truth by decay. The chemically prepared groceries, and the fermented fruits and vegetables, transported from long distances and different climates, added to soft, sloppy cooked mixtures of lemons, eggs, milk and sugar, enter now largely into our daily diet ; tough meat, hard bread, and simply prepared articles that require physical force in mastication are neglected and so the teeth and jaw. have no healthy exercise, and hence under 90 decadences The former articles are not insalivated as they pass through the oral cavity ; and the secretions they excite all of a vitiated nature, which dissolve, not only food left in the mouth or between the teeth, but the teeth themselves. The food not having any physical resistence, mastication is not necessary, and insalivation not important, and the secretions of the organs of the economy are acrid ; added to these unhealthy surroundings, the period of rest, these impure secretions become more erosive by being retained in the warm mouth, and give rise to final breath. It is necessary, to convince to the contrary, one who imagines that his mouth is in good hygienic condition, to let him pass a thread or quill toothpick betweon the teeth in unfreqnented regions, and to put it to his nose, when he will understand why decay could so readily occur. It is not the perversity of human nature, but the ignorance of the importance of thorough cleanliness, that makes so much work for dentist. A proper, thorough and skilful application of the tooth-brush is practised by the fewest number. It is really a work of art to cleanse teeth, and the oral cavities, tonsils, fauces, so they will bear a critical examination. The Chinese have a professional, whose duty it is to pick and cleanse the teeth.

The natives of India in performing the mysteries of their toilet, while brushing the teeth and mouth, run the primitive banyan-root brush down the throat so far and make such retching, hawking and spitting, that the uninitiated would imagine that some terrible calamity had befallen the victim. To brush after meals and before going to bed, with water; and often to employ hot water. He recommends medium sized brushes of medium strength of bristle should be used with an upward and downwaid motion from the gums to the edges of the teeth, making the bristles act as so many tooth-picks, forcing and lifting out particles of food. Too frequent use of any dentifrice, causes nearly all cases of abrasion.

The dentist should instruct the patient in the care of the teeth, and step by step, as the new ones come forward, they should be cleansed, brushed and picked, and cared for, in such a manner that decay would not occur. Then in the ideal future, when we can see our patients with a sound mind, in a sound physique, supported by food masticated with sound teeth, the pinnacle or highest result of dentistry will have been reached.

Literary Notices and Selections.

HYPEROSTOSIS OF ROOTS OF TEETH.

By Frank Abbott, M.D., New York, N. Y.

(Read before the American Dental Association, at Niagara Falls, August, 4 1886)

Under the term "hyperostosis" I propose to consider all the forms of pathological new growths of cementum, including what authors are wont to term osteoma, exostosis, hypertrophy of the cement, etc.

As to the cause of this not very infrequent disease, the following points may be enumerated.

A. Direct irritation of the pericementum through slight long standing caries of the crown or neck; or, exposure of the pulp, mainly the result of caries.

B. Localized irritation af the periementum of constitutional origin, such as gout and syphilis.

C. Irritation of the pericementum of upper teeth after the removal of their unagonizing teeth of the lower jaw, the result of or induced by gravitation.

Obviously, irritation of the pericementum is considered by all authors as the cause of outgrowths of cementum.

All tumours are considered as the result of a chronic irritation of the mother tissue ; not sufficiently intense to produce symptoms of inflammation, with its typical termination into hypertrophy, or, should suppuration have preceded, into cicatrization. Tumours are unlimited growths, caused probably by a constant local irritation, first of the mother tissue, and later on of the already formed tumour itself. Recently the theory of the late Cohnheim has attracted no little attention, viz., that "all tumours are the result of a misplacement of embryonal germs." Unquestionably such a misplacement may occur, but in many instances they either are not traceable, or embryonal tissues may be found misplaced in normal tissues, without ever having given rise to the formation of a tumour. That a chronic irritation of the pericementum, whatever the cause may be, may result in a new formation of cementum, nobody will doubt ; nay, it has been clearly proved by Bodecker that a circumscribed hyperostosis of the cementum may arise from chronic pericementitis. The question, however, is, can a diffused enlargement of the cementum occur in consequence of pericementitis, either of a local or constitutional origin, after the cementum has once been fully formed ? This question I feel constrained to answer in the negative, and I base my opinions upon microscopical studies of such tumors. My conviction is that hyperostosis of cementum of a diffused character is *in most instances a fetal malformation.*

If a carious tooth be extracted, and the roots be found in a hyperplastic condition, the first impression, of course, would be that the inflamed pulp in this case has led to pericementitis, and the latter to hyperostosis of the roots. This undoubtedly in some instances may be the case, more especially when the process of caries has attacked a lateral surface of the crown or the neck of a molar, and the root or roots nearest to the point of irritation of the pulp are found to be enlarged ; but if all the roots of a molar are uniformly enlarged, or fused together, we hardly feel justified in stating that caries was the primary and hyperostosis of the roots the secondary cause, or the result of such a primary cause; for it is possible that the hyperplasia of the roots has been present long before the caries made its appearance. The latter assumption becomes almost a certainty when, upon grinding such teeth for microscopical research, we find, either that the caries has not penetrated sufficiently deep to cause inflammation of the pulps or the dentine is found in a condition which could not be the result of simple "eburnitis," but can have been the result only of a malformation at the beginning of its growth in fetal life.

After a careful study of a large number of specimens of hyperostosis, I feel entitled to the statement that such teeth were sound and their pulps alive at the time when the bony growth had formed. I would therefore question the statement of Dr. Barrett, in his paper entitled "Exostosis," recently read before the Connecticut Valley Dental Society.

Whenever a tooth becomes deprived of its nourishment from the pulp, I doubt the possibility of an osseous new formation upon the cementum; and, further, should such a new formation have existed previously, its growth has undoubtedly ceased the moment the life of the pulp was gone. Should a dentist extract a sound-looking tooth to relieve excessive pericementitis, or neuralgia suspected to arise from pericementitis, and find the root or roots considerably enlarged, he would hardly be justified in concluding that the pericementitis and neuralgia had caused the growth upon the roots; but, on the contrary, he would naturally conclude that the growth had been the primary and the pericementitis and neuralgia the secondary features of the disease. If a large number of sound-looking teeth be removed from the same person's upper jaw, for instance, to relieve neuralgia, the roots of all of which are found to be considerably enlarged, we conclude that these roots were malformed at the earliest stage of their development. I have in my possession six upper molars, all removed from the same person's mouth, to relieve neuralgia, the roots of all of which are more or less enlarged; three of them have no decay whatever in their crowns, and the other three are but slightly affected. At the time of birth only the crowns of the temporary teeth are found to have been formed, and nothing is known as to the exact period of beginning of the formation of cementum upon the roots; probably it is during the first year of extra-uterine life, the process beginning upon the permanent teeth several years later.

Cementum being identical in its construction with boney tissue, we are safe in concluding that their development is likewise identical. Bone, the same as any other tissue, originates or is built from medullary or embryonic tissue. It makes no difference whether cartilage is formed first, as in the lower jaw-bone, or fibrous connective-tissue, as in the flat skull bones ; the changes, in order to produce bone, are the same—each is first converted into medullary or embryonic tissue, from which the bone proper is formed. Some of the older authors (Tomes, Shelly, and others) adhere to the theory that medullary corpuscles (osteal cells) "secrete or accumulate about them an outer investment of basis-substance, and afterward, being hollowed out, form the lacunæ, while the canaliculi are made on the plan of pore-canals of plants. To-day we know that the lacunæ contain living protoplasm, the so-called bone-corpuscles, and the canaliculi hold for tenants delicate offshoots of the bone-corpuscles—*i.e.*, fibres of living matter. To-day we also know that the basis-substance arises from medullary corpuscles, the same as the bone-corpuscles themselves. The theory of secretion of intercellular substance is a theory of the past. All good and reliable observers agree that only one portion of the protoplasm is transformed into basis-substance, viz., the lifeless liquid, which changes into a solid glue-yielding mass, which forms the matrix, and is the seat of infiltration of lime-salts, the living protoplasm remaining unaltered in the bone-corpuscles, and its *living* portion of their offshoots is preserved in the basis-substance within the canaliculi. No growth of any tissue is possible without its being first partially reduced to medullary elements. An augmentation of the cementum is impossible without a preceding augmentation of the medullary tissue, which, again, is caused by increased nutrition, or, as it is generally expressed, an irritation. Bödecker has demonstrated that in normal cement the lacunæ contain protoplasm, a portion of which is living matter, and that the whole basis-substance is traversed by a delicate reticulum—far more delicate, indeed, than previous observers have thought canaliculi to exist. This reticulum contains the threads of living matter in a cobweb arrangement. Thus, it was proved that the cementum is not an inert mass, a deposition of lime-salts, with hollow lacunæ and canaliculi.

I propose to show that cementum, in a pathological (hyperplastic) condition, is endowed with properties of life the same as in normal cementum. Thus it becomes explicable that hyperplastic cementum itself may become the subject of pathological processes, particularly of inflammation. Hyperplastic cementum may, and often does, become partially destroyed by cementitis, and transformed into medullary tissue, from which, evidently, an additional new growth of cementum may start.

It is only the knowledge that cementum is a living tissue *all through* that enables us to understand the process of its development, its growth, its enlargement, its destruction, and its re-formation.

Since the beginning of the present century a good many reliable observers have described and depicted anomalous teeth with hyperostosis in varying degrees of development. Some of these illustrations are striking examples of the excessive growths to which cementum may attain, and still be tolerated by the sufferer. All observers and clinicians, I think, generally agree that this disease attacks bicuspids and molars only, incisors and cuspids appearing to be exempt; and, again, the teeth of the upper jaw are more frequently affected than those of the lower.

Facial neuralgia, of the most severe and unyielding character, is frequently caused by these malformations. At the same time, the symptoms which point to a diagnosis of hyperostosis of the roots are not very marked. When observable at all, however, they consist of a slight continued uneasiness in the jaw (as sometimes expressed by a patient, "I can't call it real pain, but I am *constantly* aware that I have a tooth in that locality"). It is akin to pain, with slight soreness of the tooth or teeth upon biting, while excessive pressure upon it in any direction is productive of quite severe and prolonged pain. Eventually the soreness becomes more marked, and the pain constant or intermittent, and finally terminates in, possibly, an abscess, severe mental derangement, or the removal of the tooth as a cure.

It is not infrequently the case that a patient suffering from neuralgia applies to a dentist to have a certain tooth extracted for relief, the case being to the dentist so obscure that he takes the patient's word for it, and takes the tooth out; but, to his disgust, the patient, after a few moments, turns to him and says, "Why, doctor, that isn't the tooth; the pain is just as bad as it was before you took it out." This operation is repeated over and over again, with the same result, until, finally, perhaps, it is the last tooth in the jaw which, when taken out, reveals the cause of this long suffering, in an enlarged root or roots from hyperostosis. A peculiar feature in these cases is the long-continued and most distressing pain that follows such extractions, relief coming but very slowly.

As custodian of that portion of the museum of the New York College of Dentistry which pertains to my department, I have come into possession of seventy odd teeth exhibiting hyperostosis of the roots, and this comparatively large number prompts me to try to classify the different varieties as they occur to me. I will here add that about one-third of these teeth are sound, or very nearly so. Previous authors have simply described different forms, more or less striking, without observing any system in the arrangement.

I. CIRCUMSCRIBED HYPEROSTOSIS.

Under this title is included osteoma and exostosis of the authors, which are characterised by an outgrowth of bone-tissue from the cementum, of a limited size, varying from that recognisable with the microscope only to that of a lentil or a pea. Their surfaces usually present a nodular appearance, and sometimes they are adjacent to newly-formed cancellous structure of bone, evidently caused by osteitis of the socket. I would sub-divide this group into :—

A. Osteoma on the body of the root.

B. Osteoma on the apex of the root.

Either of these appears mostly upon teeth the crowns of which are more or less destroyed by caries, with, probably, a long-standing exposed pulp, which plainly indicates that their cause is likely to be accounted for in localised pericementitis from this source. If, however, we bear in mind that the destruction of the life of the pulp prevents or stops the formation of osteoma on the roots, we must come to the conclusion that such tumors had commenced their formation long before the exposure of the pulp, or it must have remained alive for a very long time after its exposure before it died, causing, during this long time, a slight but constant irritation of this tissue, transferred to the pericementum.

As soon as severe pericementitis sets in from an exposed pulp, unless vigorous steps for its relief are taken, the pulp is in a fair way to become lifeless very soon. After its death, severe pericementitis and its distressing terminations are too well known to practitioners to need mentioning here. In neither of the latter instances would we expect a bony outgrowth on the roots. It is only an irritation of the pericementum while the pulp is living that, in my judgment, can result in an *increased* cementum.

In some persons, or conditions of persons, a very superficial decay, more particularly upon the necks of teeth, will produce marked pericementitis and neuralgia. We may infer from this fact that in other persons or conditions (or possibly the same), perhaps under the influence of constitutional disturbances, a local irritation of the pericementum is induced, causing exostosis, long before exposure of the pulp had occurred.

II. Diffused Hyperostosis with Roots Separated.

Under this heading a large number of specimens of my collection can be summed up, either of otherwise sound teeth, or those decayed or filled. From what I have stated before, I will admit that pericementitis from caries is a cause of hyperostosis only when one root or two be involved, and others in a normal condition, and the enlarged root or roots corresponding to the carious cavity either on the neck or crown of the tooth. When all the roots of molars are affected, without the least symptom of disease upon the exposed portion of the tooth in the mouth, I can see no other correct course but to seek for the cause of malformation in the beginning of the formation of cementum, to wit, during the first year of extra-uterine life. Hyperostosis of this kind invades the roots from the apex to the middle, to two-thirds their length, sometimes even to their necks. The enlargement is either blending with the crown, without a distinct boundary line, or there is more or less marked bulging of the augmented tissue. The enlarged portion is either in a more or less horizontal line or is fluted, with here and there irregular prolongations towards the crown. In one instance I have seen a small enamel nodule corresponding exactly to the summit of a marked conical prolongation of the cementum. Sometimes the bulging of the cementum reaches the crown, and may be distinctly seen overlapping the enamel. Such formations are usually either smooth or slightly nodulated. Sometimes they are corroded as if by inflammation ; and, again, upon a comparatively smooth mass there may be found bulging forth an irregular nodule of circumscribed osteoma, evidently the result of an excessive formative pericementitis.

In one of my specimens, a left upper second molar, there is upon the anterior surface of the buccal root a pit two and a half millimeters in diameter and one millimeter in depth, the base of the pit being finely corroded and nodular. On the same surface numerous small nodules are scattered about. On the neck the hyperplastic cementum is one millimeter in thickness, and terminates all around it in nearly abrupt line.

On a right upper second molar the palatal root exhibits at its apex a cauliflower-like excrescence, upon a comparatively smooth osteoma, about one millimeter in thickness, occupying the upper two-thirds of the root. The excrescence sends a delicate conical offshoot to the mass which cements the buccal roots together. The posterior portion of the crown of this tooth has a carious cavity in it the size of a French pea, with the pulp-chamber opened.

Roots of this kind look very clumsy and shortened, for the reason that at the place of their union the hyperostosis forms a heavier mass, which has more or less filled the space between them ; still they remain separate to a considerable extent.

III. Diffused Hyperostosis with Roots United.

This group may be subdivided as follows :

A. Apices free and straight.
B. Apices free and curved.
C. All roots united their entire length.

Teeth of group A are characterized by an osseous outgrowth of cementum accumulating at the point of junction of the roots,—the roots themselves being either slender and free from osteoma or slightly thickened. An upper wisdom-tooth presenting this anomaly has five roots, three of which are normal at their apices, the fourth being the seat of a diffused hyperostosis encircling it, and the fifth tooth being rudimentary. All, however, are united into a common mass a short distance from their apices, which mass gradually blends with the enamel.

Teeth of group B exhibit a union of the roots with markedly devious but slender apices. A left upper second molar of my collection shows this evidently rare anomaly. The palatal root is slightly devious, with an apex arising from the main mass of the root at a right angle. The buccal root (there is but one) shows two curvatures, both at right angles. The osteoma is only moderately large, and on the posterior surface, at the point of junction of the roots, there is wedged in a sessile oblong nodule, below which is a shallow furrow, indicating the original point of the separation of the two roots. The crown of this tooth is not decayed.

Teeth of group C are rather common. In third molars or wisdom-teeth, both of the upper and lower jaws, a union of the roots is quite generally their normal condition. Osteoma, when found upon such roots, is either a clumsy nodular mass without any sign of a previous separation, or slight furrows may be visible indicative of such separation of the roots.

There is a history connected with a lower left wisdom-tooth in my collection that I will give in abstract, feeling that it may be of interest to some who may hear or read of it. It exhibits a diffused osteoma, ridged and nodulated, with a bent apex toward the ramus. It was extracted from the mouth of a lady some years since by my friend, Dr. S. A. Main, of this city, who kindly presented it to me with the following history: For some ten years this lady had suffered most excruciating from facial neuralgia. She consulted the best medical talent at home without obtaining the slightest relief. Finally, some there years before the tooth was removed, she went to London, where it was determined by the surgeon who was called to attend her that, in order to afford any relief, it would be necessary to sever the facial nerve upon the side which seemed the most affected, which operation was done,—with, however, only temporary relief. With the hope that the slightest cessation of pain would be speedily followed by permanent cure, she went to Paris, anticipating the pleasure of a comfortable tour of the Continent, where in a few days the pain again returned with renewed energy. She there consulted a surgeon, who decided that the only chance for permanent relief was to have the facial nerve divided upon the other side of the face. The operation was done with no better results than from the first. Finally she concluded to return to her home in New York, there to spend the few days (as she supposed) which she had to live as comfortably as possible. Shortly after arriving at her home she consulted her dentist (who, by the way, she had never thought to consult before in reference to her neuralgia), and asked him to look at this tooth, same time that it often felt quite sore to the touch. (Its antagonist had been taken out many years before.) After examination, she was advised to have it taken out, which was done. Immediately upon its removal the lady realized that the cause of her long-continued, fearfully distressing, and very expensive neuralgia had been found at last, which proved to be true. She then told Dr. Main that that tooth had cost her ten thousand dollars. (Two Thousand pounds.)

(To be continued.)

ANÆSTHESIA *versus* ASPHYXIA.

By Dr. S. J. Hayes, Pittsburg, Pa.

It is to be very much regretted that the vast difference between anæsthesia and asphyxia, has been almost entirely overlooked by writers on anæsthetics and artificial anæsthesia. And yet, not until we are prepared to concede that anæsthesia is produced by the continuation of the *forces* and *functions* of life under modifications induced by medico-chemical agencies, and that asphyxia is the result of a suspension or abrogation of these forces and functions,—also, that oxygen is the only *life-giving principle*, then, and not until then, can we fully recognise the *essential, fundamental and* " *bedrock* principle " that there can be no anæsthetic without a proper admixture of atmospheric air with a suitable narcotic, (except it be locally applied), which must be necessarily and unchangeably true, as the atmosphere is the only element in the physical world that will sustain respiration and life, and therefore is *absolutely essential* to an anæsthetic.

Though the gases composing the pure atmosphere may be breathed in other relative proportions or other gases, such as carbonic acid (CO^2), carbonic oxide, (CO), or nitrous oxide, (N_2O), may be taken, for a very limited time, yet they do not support respiration and life, and consequently, are not anæsthetics, and are never taken without physical injury or positive danger to life. In fact, they antagonise life from the very first inspiration. True, they produce unconsciousness and insensibility, but by asphyxia which is the legitimate result of depriving the blood of the life-giving principle,—oxygen—and thus the death of the patient is inevitable when the continuous use of the nitrous oxide or other gas has so weakened the affinity of the blood for oxygen that it fails to appropriate the oxygen from the air. The failure of these gases to sustain life is not attributable to a lack of oxygen in them, as they contain a greater quantity of oxygen than the atmosphere ; but, that the affinity of the oxygen for the other gas, is greater or stronger than the affinity of the blood for the oxygen, and consequently, the blood cannot appropriate the oxygen, and therefore, the gas fails to support life.

And yet a very common error, entertained by many, both in the medical and dental professions, is that, as nitrous oxide (N_2O) consists simply of the elements of common air only in different proportions, that it certainly cannot do harm ; and that since it has a larger proportion of the life-giving principle — oxygen — when inhaled it should only make one live faster than when he breathes the air. But this shows gross ignorance of the laws of chemical affinity. It is blending a chemical combination with mixture and drawing conclusions accordingly ; certainly a most absurd and fatal mistake.

As pure oxygen would be too stimulating for respiration, we find it in the atmosphere diluted wtth nitrogen, an inert gas, simply in a state of mixture, the nature of neither being essentially changed. In like manner, oxygen and hydrogen, when merely mixed retain their gaseous forms and elemental properties, and while simply in a state of mixture are exceedingly inflammable and explosive, but when these two gases are chemically combined the result of that chemical union is water, which is entirely antagonistic in its properties to either of its elements. Therefore, we recognise, in this, the universal law of chemistry, that whenever two elements are united by chemical affinity, the properties of both are changed, and the result is a third substance differing from either ; and that the elements in such union cannot act in their individual capacity till a positive decomposition is effected. Therefore, it is perfectly absurd to suppose that the blood is appropriating oxygen for the simple reason that we are inhaling something of which oxygen is a chemical constituent. Take for further illustration these two gases — nitrogen and oxygen—in their five different proportions, chemically combined,— nitrous oxide, (N_2O), nitric oxide, ($N O$), hyponitrous acid, ($N_2 O_3$), nitrous acid, ($N_2 O_4$), nitric acid ($N_2 O_5$). Now bearing in mind distinctly the nature and properties of these elemental substances, or when they are only mixed as in the atmosphere, and note the wonderful changes wrought by these chemical combinations.

While one proportion of nitrogen and one of oxygen form the exhilarating protoxide of nitrogen or laughing gas, two proportions of oxygen and one of nitrogen constitute nitric oxide gas, one inspiration of which would destroy life almost instantly; five proportions of oxygen to one of nitrogen form nitric acid, (aqua fortis) which cannot be tolerated a single moment by any part of the human system. Now, if it were true that the more oxygen we combine with nitrogen, the more exhilarating and healthful is the result; then, according to this logic, nitric oxide should be twice as exhilarating and healthful as nitrous oxide or laughing gas and nitric acid (aqua fortis) five times. Therefore, the logic is irresistible, and the conclusion inevitable, as we have demonstrated, that oxygen, to be available for the support of respiration and life, must be free as in the atmosphere, and that any quantity of oxygen in chemical union with other elementary substanees can avail nothing in the support of life; and that the pure atmospheric air is the only element on God's earth that will support respiration and life, and hence, is absolutely essential to an anæsthetic. And since and other elements administered instead of the pure air always endanger health and life, the use of nitrous oxide or laughing gas, carbonic oxide and other gases for the pretended purpose of producing anæsthesia should be prohibited by law.

That pure atmospheric air is nature's only element for respiration to sustain animal or vegetable life, has been repeatedly demonstrated. When nitrous oxide gas is inhaled, it enters the blood as nitrous oxide and is eliminates as nitrous oxide. As Dr. L. Trumbull, in his Manual of Anæsthetic Agents, says: "Latterly it has been disproved, both by experiment and observation, *i. e.*, the theory which for a time prevailed in the United States that nitrous oxide acts upon the blood as an oxygenating agent; no experimental proof has yet been furnished that nitrous oxide is decomposed in the blood or forms chemical combinations with it. It enters into the blood as nitrous oxide and as such is eliminated."

As early as 1863, Dr. C. W. Foster, a dentist of high repute in Massachusetts, made a severe onslaught on the "high priest of this Modock" in the following language: "When I say nitrous oxide is not an anæsthetic, *per se*, I mean strictly so. Nitrous oxide may be given pure and with the greatest caution but, that does not affect the statement just made; the principle is the same." And then he adds, "That nitrous oxide supports combustion in the body is seen in the remarkable exhilaration of oxidation at exhibitions, etc. That it cannot support respiration or life but a few moments is seen in that frightful gasping of the patient, growing deeper and faster as he dies for want of air. These are the symptoms that precede the stupor and insensibility of this wondrous anæsthetic.

Drs. Joylet and Blanche, in the Archives de Physiologe of July, 1879, give, as the result of their extensive experiments that "The protoxide of nitrogen, chemically pure, is not able to sustain respiration in animals any more than in plants, the combustion (in which respiration consists) not being sufficiently energetic to decompose the nitrous oxide gas.

"Breathed pure by animals, the protoxide of nitrogen is an asphyxiating gas, which produces death with all the usual signs of asphyxia by strangulation or by respiration of the inert gases (nitrogen and hydrogen) and in almost the same time. Breathed pure, if the nitrous oxide produces anæsthesia it is by privation of oxygen from the blood, insensibility showing itself when the arterial blood commences to have only two or three per cent. of oxygen. The arterial blood is then very black, and contains thirty or forty per cent. protoxide of nitrogen. Animals are able, by breathing an atmosphere of protoxide of nitrogen and oxygen in the proportion of the gases in the air, to live, the nitrous oxide replacing the nitrogen without producing troubles of insensibility.

"The arterial blood then contains thirty to thirty-five per cent. of protoxide of nitrogen. Birds plunged in a similar confined atmosphere, behave like those placed under a bell-jar of the same capacity containing air, and die, after having nearly equally consumed the oxygen in the receiver, and formed as much carbonic acid. The protoxide of nitrogen being an irrespirable gas, and possessing none of the anæsthetic properties that have been attributed to it, its employment can only be dangerous, and should be under that title prescribed from medical practice."

Dr. H. Lyman, in his extensive and thorough work on

"Artificial Anæsthesia and Anæsthetics," page 318, says: "Nitrous oxide does not enter into any chemical combination with the elements of the body, but is simply dissolved in the blood, hence its speedy entrance and departure from the organism. Again, nitrous oxide is not decomposed in the blood; consequently, it cannot replace oxygen or yield oxygen for the respiration of the tissues."

A committee appointed by the British Medical Association reported to the same effect in the British Medical Journal of January, 1879, to which we invite the reader's attention.

(*To be continued.*)

Reports of Societies.

THE DENTAL STUDENTS' SOCIETY, OF THE BIRMINGHAM DENTAL HOSPITAL.

THE first meeting of this newly-inaugurated Society took place at the Dental Hospital, 71, Newhall Street, Birmingham, on November 4.

The President, Mr. Charles Sims, occupied the chair; and there were present, Mr. John Humphreys (Vice-President), and Messrs. Frank E. Huxley, W. Palethorpe, W. Madin, E. Sims, A. J. Wilson, P. Naden, G. C. Matthews, W. Parrott, F. W. Richards, G. Marson, Fred. R. Howard, and A. D. Millen, the Hon. Sec.

After the formal business of the Society was transacted, an interesting paper was read by Mr. W. Palethorpe, entitled, "Extraction and its Attendant Accidents." The paper derived additional interest from its being illustrated with numerous diagrams and drawings. At its conclusion, a hearty vote of thanks was tendered to the reader.

At a recent meeting (held Dec. 2), a paper on "The Pathology of Dental Periostitis" was read by Mr. A. D. Miller. Mr. W. Madin also contributed an interesting essay on "Pivots and Pivoting," which gave rise to considerable discussion. Mr. Charles Sims exhibited a case of Ranula, and showed a specimen of Lining Membrane of Cyst of Antrum, with unerupted canine tooth, and Fibroma of Jaw.

The Society will meet on the evening of the last Thursday in each month, from October to April.

BIRMINGHAM DENTAL STUDENTS' SOCIETY.

President.—CHARLES SIMS, Esq., L.D.S. (Eng.)
Vice-President.—JOHN HUMPHREYS, Esq., L.D.S.

Committee.—Charles Sims, Esq., L.D.S.; John Humhreys, Esq., L.D.S.; and Messrs. W. Madin, Fred. R. Howard, P. T. Nadin, and A. Miller.

RULES, ETC.

Object.—The object of the Society is for the reading and discussing of papers for the furtherance of Dental Science among its members.

Rules.

I. That meetings shall be held on the last Thursday in every month, from October to April, inclusive, at the Dental Hospital, at 6 p.m.

II. That the Officers of the staff of the Hospital be Honorary Members, ex-officio, but shall not read papers or take part in discussion, except by permission of the Chairman. The Assistant Dental Surgeons and House Surgeon may be elected as ordinary Members.

III. That the members of the staff be asked to take the chair at each monthly meeting, and to conduct the business of that evening.

IV. Any student wishing to become a Member must be proposed, seconded, and elected at one of the Monday meetings.

V. Every Member shall, with the consent of the Chairman, have the power of introducing a visitor, who may take part in discussion, but is not entitled to vote on any business.

VI. That the annual subscription be 3s. 6d., due October 1, in each year.

VII. That these Rules be subject to such alterations, from time to time, as may seem fit, on notice being given at any general meeting.

A. D. Miller, *Hon. Sec.*

EDINBURGH DENTAL STUDENTS' SOCIETY.

The first ordinary meeting of this Society—Session 1886-7—was held in the Board Room of the Edinburgh Dental Hospital, on Monday evening, Nov. 8, Mr. J. Stewart Dumard, the President, in the chair.

Mr. Alexander Cormach, one of the Honorary Presidents, delivered an inaugural address, and Mr. James G. Munro read a practical paper, entitled, "Continuous Gum Work." During the delivery of Mr. Munro's paper, a number of specimens of work were handed round, which led to some discussion, in which the President, Messrs. Finlayson, Cormach, and David Munroe took part.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

THE objects of this Society are to deal with the consideration of matters generally and specially pertaining to dental science, the advancement and welfare of its members, and the facilitating of social intercourse among them. Ordinary meetings are held at 8. p.m. on the first Monday in every month, from November to March. Entrance fee, five shillings. Annual Subscriptions :—Past Students, five shillings ; Present Students, two shillings and sixpence. Place of meeting, 30 Chambers Street, Edinburgh.

The office-bearers for 1886, are, Honorary Presidents : W. Bowman Macleod, L.S.D. ; Alexander Cormack, L.D.S. ; President : J. Stewart Durward, L.S.D. ; Vice President : William Wilson, M.B., C.M., L.R.C.S.E., L.D.S. ; James Leslie Fraser, L.D.S.. Council : Edwin A. Cormack, L.R.C.P. & S. ; L.D.S. ; David Monroe, L.D.S. ; R. Keith Common ; John Turner. Treasurer : David Cormack ; Secretary : Frederick Page.

For the Session 1886-7. The programme includes November 8. 1886. Inaugural Address, Alexander Cormack. " Continuous-Gum Work—Illustrated," James G. Munroe. December 6. " Dental Improvements, or otherwise," James Johnstone. January 12, 1887. (Wednesday.) " Cursory Notes concerning the state of Dental Education and Practice in America," Oswald Fergus. February 7. " Neuralgia as Occasioned by Dental Irritation," David Monroe. " A Case of Bridge Work," J. Stewart Durward. March 7, Our Student and their Hopital Career," Frederick Page. " Pulse Tracings durfng Nitrous Oxide Anæsthesia," Daniel Mouat.

Annual Dinner. Several Clinics will be held during Session.

Dental News.

APPOINTMENTS.

Mr. J. Moore Lipscomb, L.D.S., R.C.S., Lond., has been appointed Dental Surgeon to the Kilmarnock Infirmary.

Mr. James Carson, L.D.S., R.C.S., has been appointed Dental Surgeon to Dalbeth Convent, Parkhead, Glasgow.

DEATH.

ON the 13th Ult. at Glendale, Surrey Road, Bournemouth, William Alfred Newman Cattlin, F.R.C.S.E. Friends will kindly accept this intimation.

British Journal of Dental Science.

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ON THE POSITIONS AND RELATIONS OF THE TEETH IN CHILDREN.*

By J. Symington, M.D., F.R.S.E., *Lecturer on Anatomy, School of Medicine, Edinburgh.*

One of the principal objects of this communication is to direct attention to a method of investigation which appears to have been almost entirely neglected in the examination of the relations of the teeth in children, but which has proved of great value in the study of the topographical anatomy of other organs of the body. I refer to the plan of freezing the parts we wish to examine, and then making sections with a fine saw. I hope to be able to demonstrate, from specimens prepared in this way, several interesting points in the topographical anatomy of the teeth and jaws that appear to have been hitherto overlooked.

The position of the permanent teeth before their eruption, has been mainly investigated in the dried skull, the teeth being exposed by filing away the bone external to them. While specimens prepared in this way afford a connected view of all the teeth, they possess several obvious disadvantages. For instance, by the removal of the soft parts, some important relations of the teeth are lost. Again, there is considerable danger of those teeth that happen to be only partially calcified, shifting their position in consequence of the drying up of the soft pulp, and owing to the manipulative procedure adopted in exposing them. On the other hand, by freezing the undissected head and cutting it up into thin slices while frozen, we retain the soft parts in their natural position, and obtain beautiful sections of the teeth, even though they are only slightly calcified. Such sections also show, much better than ordinary dissections, the relations of the teeth to the neighbouring cavities, and the relative positions of the teeth of the upper and lower jaws.

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* A Paper read before the Odonto-Chirurgical Society of Scotlan .

The first preparation I propose to describe is a transverse vertical (coronal) section of the head of a child about two months old. The section, although essentially coronal, is slightly oblique from side to side, being a little further forward on the right side than on the left.

In this case, the mouth was closed before the body was frozen, so that, as can be seen from the section, the dorsum of the tongue was in close contact with the palate, and the cavity of the mouth was merely potential. It will, however, be observed that the gums of the superior dental arch do not meet those of the lower, but are separated by a distance of 6 mm. The space between the gums, opposite the incisors, was about the same as at this level. Several sections in my possession from new-born children, show a corresponding separation between the two gums. In one case, that of an infant five days old, the head was flexed before the body was frozen, so that the chin was pressed against the front of the neck, and the mouth was thus firmly closed; yet the interval between the gums of the upper and lower jaws was nearly equal in extent to that seen in the child two months old. Infants of about these ages are probably able, by forcible contraction of the elevators of the lower jaw, to bring the gums in apposition; but these sections show that this does not occur under ordinary circumstances, even though the mouth is so closed that the tongue is in close contact with the palate. I have been unable to find any reference to these relations of the gums, but they are of interest, as they show that, owing to the shape of the jaws, provision exists at birth for a considerable development of the alveolar arches and teeth before the gums of the two jaws can readily meet.

If a vertical mesial section be made of the head of a new-born child, or of one a few months old, the cut edge of the gum of the lower jaw will be found lying in a plane posterior to that of the upper. On an average the posterior alveolar plate of the upper jaw is opposite the anterior one of the lower jaw. In the coronal section of the child two months old, the second molars were divided in the upper jaw, and the first molars in the lower. This was not due to any obliquity of the section, but to the fact that the corresponding teeth in the two dental arches do not lie vertically opposite one another, those of the lower jaw being behind those of the upper.

At this age the maxillary sinuses are narrow from side to side, and do not extend outwards to any appreciable extent between the alveoli of the teeth and the orbits. In this infant each sinus measured about one-third of an inch from before backwards.

C. S. Tomes* describes the alveoli of the upper jaw in the newborn child as "separated only by a thin plate of bone from the orbits." In the child two months old, this osseous wall opposite the second molars was 4 mm. thick. On examiation it was found to consist of two layers of compact tissue, one belonging to the alveolus, and the other to the orbit, while between them there was some cancellous tissue. In new-born children I have found the bone between the alveoli and orbits nearly as thick as in this child, so that the statement of Tomes is somewhat misleading.

This specimen affords a good example of the amount of fat that may be found in the cheeks. The distance, in the plane of this section, from the outer surface of one cheek to that of the other, is about 3 inches, while that between the two buccinator muscles is little more than an inch, so that each cheek is nearly an inch in thickness. The cheek consists mainly of fat, and if this be examined it will be found to be divisible into two portions, one continuous with the ordinary subcutaneous fat, and another in the form of one or more lobules surrounded by a clearly defined capsule, so that it can be very easily shelled out. These lobules of fat have been called "sucking cushions," as it is believed that they serve an important function in the act of sucking, for they tend to distribute the atmospheric pressure, and prevent the buccinator muscles being pressed inwards between the alveolar arches when the vacuum is created in the mouth.

It is maintained by H. Ranke,† who has very carefully investigated these lobules of fat, that they exist at all periods of life, but are best marked in infants. He also asserts that in emaciated children they are only slightly diminished in size, although the general snbcutaneous fatty layer be almost entirely removed.

With the exception of the canines, the crypts of those teeth ot the permanent set that afterwards take the place of the milk teeth, viz., the incisors, canines, and bicuspids, do not call for special notice. The peculiar position of the canines before their eruption, is seen in two of my coronal sections, one obtained from a girl six years old, and another from a girl nine years old. In the first only one of the first permanent molars, viz., the left inferior, had erupted, although the corresponding tooth on the right side was nearly through the gum. The second one had cut all her permanent incisors, but the first biscuspids had not appeared. In the former subject a section was made near the plane between the first and second upper temporary molars; the posterior part of the first temporary molars destroyed by the saw, but the second temporary molars escaped injury. The anterior of the two surfaces exposed by this cut showed the first bicuspid, and the posterior one the second bicuspid. The posterior parts of the first bicuspids, like those of the first molars, were removed, but the second bicuspids were not touched, except a small part of the left one. The bicuspids were therefore vertically above their corresponding temporary molars. The principal interest of this section, however, is the view it affords of the upper canines. These are seen in the interior part of the section lying above and internal to the first bicuspids, and close to the inferior meatuses of the nose. The crowns of the canines, which were well developed, were directed outwards and forwards. On examination the septum between the crypts of the canines and the first bicuspids was found to be incomplete, the two crypts communicating by a small aperture.

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* A Manual of Dental Anatomy—2nd Ed., 1882, p. 180,

† Ein Sangpolster in der Menschlichen Backe Virch. Arch. Bd. XCVII, 1884, p. 527.

In the girl aged nine years a section was made which closely agrees in its position, and in the teeth exposed, with that just described. Thus the anterior part of the section presents a view of the first left temporary molar, which was partly decayed; above and internal to it lay the first bicuspid, while, still higher up and more internal, the canine. The section was a little farther back on the right side, and there a small opening was made by the saw into the crypt of the canine, but this tooth was not cut.

The crypts of the permanent lateral incisors and of the first bicuspids are separated simply by a bony septum, for the canines are placed on a plane above them. It is needless for me, in a Society of Dental Surgeons, to dwell upon the points of practical interest connected with this peculiar position of the crypts of the permanent canines in relation to those of the other teeth, but I would direct your attention to the admirable view that is obtained from these sections of the relation of the canines to the nasal cavity, the antrum of

Highmore, and the nasal duct. In the girl nine years old the canines were near the outer walls of the inferior meatuses of the nose, especially as can be seen on the right side of the section, near their posterior part. In the other girl, the canines were nearer the middle line, and, consequently, below the floor of the nose. From the position of their crypts, these canines might be more appropriately called nasal than eye teeth. In both the subjects, the antrum of Highmore was opened by the sections exposing the canines, and its cavity was found to extend forward fully as far as those teeth. In these children, the opening of the nasal duct into the nose corresponds to the plane of the posterior surface of the crypts of the permanent canines, while a line, prolonged downwards and backwards in the direction of the nasal duct, would reach the anterior surface of the first permanent molar.

Some of the most interesting points, in relation to the growth of the jaws after birth, are intimately connected with the development and eruption of the permanent molars ; and since the publication by John Hunter of his classical work, "On the Natural History of the Human Teeth," the process by which space is formed in the alveolar arches of the jaws for the permanent molars, has been the subject of numerous investigations. J. Tomes*, in particular, describes very fully and accurately the conditions of the jaws and teeth in children of different ages, and confirmed and extended the observations of Hunter with regard to the peculiarities in the growth of the lower jaw. It appears to me, however, from a perusal of the literature of the subject, that but little attention has been directed to the relative position of the permanent molars of the upper and lower jaws before their eruption, and the changes in their positions during their eruption ; and I will now describe some sections in illustration of these points.

The specimens I shall first consider were obtained from a female child about fifteen months old, and they show the position of the first permanent molars in the upper and lower jaws. In this subject, a horizontal section was made at the level of the mouth. All the temporary incisors and first molars had erupted, but none of them were divided, as the mouth was slightly opened, and the saw was carried backwards between the milk teeth of the upper and lower dental arches. Behind the alveolar arches, the ascending rami of the lower jaw were cut across, and the first permanent molars were exposed embedded in the basis of the coronoid processes.

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* A System of Dental Surgery, 1859.

Another horizontal section was made in this subject. It was a little above the level of the floor of the nose, and it opened the crypts of the first permanent upper molars In this case, the distance between the inner surfaces of the first temporary molars in the upper jaw was 21 mm., and between those in the lower 20 mm.; so that the upper molars were a small fraction further apart than the lower.

It was very different, however, with regard to the first permanent molars, as can be readily seen from a comparison of the two sections. The upper permanent molars were 21 mm. from one another, and the lower ones 38 mm. The lower molars were not only external to the upper ones, but also posterior to them. Thus, in the lower jaw, the distance from the posterior surface of the crown of the first temporary to the anterior extremity of the first permanent molar was 11 mm., while the interval between the corresponding teeth in the upper jaw was only 6 mm.

The crowns of the upper molars were directed downwards and slightly backwards, and those of the lower molars forwards, inwards, and slightly upwards. At this period of life there is not room in the alveolar arches for the first molars, so that these are placed, the upper at the back of the tuberosity, and the lower in the base of the coronoid process.

The second molars begin to be developed about the seventh month after birth, but they remain for a long period very rudimentary, their calcification not commencing until about the fourth year. The section in this child above the level of the floor of the nose exposed the germs of the second molars just posterior to the first molars.

We will now pass to the consideration of the appearances presented by some sections in children, a little before and during the period of eruption of the teeth of the second dentition.

In a boy about five yeas old, one sagittal section was made through the head about 2 cm. to the right, and another 3 cm. to the left of the mesial plane. The former cut passed backwards just outside the angle of the mouth, and external to the crowns of all the milk teeth, with the exception of the second upper molar, the outer surface of which was just grazed by the saw. Two fangs of the second upper temporary molars, and one fang belonging to the corresponding lower molar, were divided. This child had a very good set of milk teeth, and the upper temporary molars had their normal relation to the lower, as they extended a little further out than the latter. Behind the milk teeth, the first and second permanent molars were divided in the upper jaw, and the first permanent molar in the lower one.

The left sagittal section was more external than the right one, being about 3 cm. from the mesial plane. It was several millimetres external to the upper permanent molars, but divided the first and second lower permanent molars.

The preparations obtained by these sections demonstrate that the first permanent molars are not vertically opposite one another, and, indeed, they showed that but slight progress has been made towards this position, as compared with their relative situation in the infant fifteen months old.

In the latter subject, a section might have been made which would have just shaved the external surface of the first upper molar, and the internal surface of the lower; while in the right sagittal section in the boy the first upper permanent molar had its outer surface shaved off, and the first lower permanent molar was divided near its inner surface. The upper molar did not project to any appreciable extent externally to the milk tooth in front of it, while, in the lower jaw, the permanent molar was situated almost entirely external to the plane of the outer surface of the second temporary molar.

It is worthy of note that the gums formed a distinct ridge directly behind the milk teeth in each jaw, and that, while the upper molars were almost directly above the gums, the lower molars were below and external to them.

In the girl aged six years, already referred to, a coronal section of the head was made at the level of the first permanent molars, all of these teeth being divided. As previously mentioned, the left inferior molar had erupted, and the right inferior was nearly through the gum, but the upper molars were still a short distance from the surface. The lower molars were a little external to those of the upper jaw, but as the former inclined inwards, they would have gained their normal adult relations to the upper ones by the time that the teeth would have come in contact, had the child lived.

In a similar section, in the girl nine years old, all the first permanent molars were divided, but rather nearer their posterior surface than in the former subject. These teeth met, so that the external cusps of the lower molars were between the internal and external cusps of the upper molars. In the upper jaw, the second molars were also divided, while, in the inferior maxilla, there were no traces of the corresponding teeth. The second upper molars were cut near their anterior surface, and the specimen illustrates the fact that these teeth tend to overlap the first molars.

In each of these girls, another section was made behind that exposing the first molars. In the girl six years old, it divided the second lower molars, which were embedded in the anterior part of the bases of the coronoid processes, but the section passed behind the second upper molars. The crypts of these teeth were, however, opened, and on the left side a small piece was shaved off the posterior part of the crown of the upper tooth.

The section in the girl nine years old differed from that just described, for it passed completely behind the tuberosities of the superior maxilla. The second lower molars were divided rather nearer their posterior than their anterior surfaces, and, as in the girl six years old, they were situated in the bases of the coronoid processes. The tuberosity of the upper jaw was afterwards exposed by the removal of some fat and cellular tissue from the anterior of the two preparations obtained by this section. The wisdom tooth was found lodged in a recess at the back of the tuberosity. It was in a rudimentary condition, as although the tips of its cusps were calcified, they were not all united together ; indeed, this tooth was scarcely so well developed as in the second temporary molar at birth.

In this paper, specimens have been described in which the first permanent molars were exposed and their positions determined in an infant fifteen months old, in boy five years old and in two girls, aged respectively six and nine years. From these preparations, it is evident that the relative position of these teeth in the upper and lower jaws before eruption, is the reverse of that which they occupy after they cut the gum and their crowns come in contact. Before eruption, the first upper molars lie much nearer the mesial plane, and also further forwards, than the lower ones ; while, after they come in contact, the crowns of the upper molars extend a little further outwards and backwards than those of the lower. Unfortunately my specimens do not illustrate so completely the relative position of the second and third molars ; still, there can be little doubt but that they undergo similar changes in position. Thus, in the boy five years old and in the girls six and nine years of age, the relative position of the second molars of the two jaws is very similar to that of the first molars in the infant fifteen months old.

The question now arises as to how the permanent upper and lower molars alter their respective positions, so that in place of the upper ones being distinctly anterior and internal to the lower, they become slightly external and posterior. Is it by a difference in the growth of two jaws by which the teeth are brought vertically above one another, or is it to be attributed to a difference in the direction taken by the teeth during their progress towards one another?

There are several differences in the condition of the two jaws that might lead us to suspect that during their growth the posterior part of the alveolar arches may extend outwards and backwards more rapidly in the upper than in the lower jaw. In the upper jaw, the alveoli for the permanent molars are formed from the lower and back part of the tuberosity, while in the lower jaw, there must be an absorption of the anterior part of the ascending ramus before space can be formed for these teeth. Again, the suture between the two halves of the lower jaw is obliterated by the end of the first year after birth, so that increase in the breadth of the jaws can only occur by deposition on their outer surface and absorption on the inner; while, in the upper jaw, the suture between the superior maxillæ persists during the whole period of life, and consequently the superior alveolar arch can increase in breadth by new formation of bone at the inner edge of the palatine process as well as on the outer surface of the alveolar arch.

According to C. S. Tomes,* the distance between the inner alveolar plates at the level of the junction of the first and second temporary molars is practically the same in an infant eight months old, as the corresponding points are in an adult.

From my own limited observations, I should feel inclined to believe that the growth of the lower jaw is accompanied by some increase in the space between the inner alveolar plates, but that it is probably a little more marked in the upper jaw than in the lower. I believe, however, that it is mainly owing to the differences in the direction of the upper and lower molars that the relative position of these teeth is altered. It will be evident from an examination of the sections of the first lower molars in the child fifteen months old and of the second molars in the girl six years old that these teeth have a decided inclination inwards and forwards. On the other hand, however, the upper molars exhibit a tendency to point outwards and backwards. This difference in direction is very obvious, even in the adult skull.

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* Op. Cit., p. 185.

It is well known to dentists that the outer alveolar plates of the lower molars are much thicker than the inner ones, while the reverse is the case with those of the upper molars. If the lower permanent molars be examined by looking vertically down upon them, the inner part of their crowns will be found to overhang their internal alveolar plates, so that the latter are concealed from view ; while a similar examination of the crowns of the upper molars reveals a tendency of the outer parts of the crowns to bulge beyond the level of the outer alveolar plates. As the opposing molars have a considerable distance to travel, during their eruption, before their crowns can meet, the differences in their course must give rise to a marked alteration in their relative position.

The opinion, that it is rather the differences in the direction of the teeth than in the growth of the jaws, that account for the alteration in the position of these teeth, is supported by the examination of the sections of the boy five years of age and of the girl six years old. We have seen that in the boy, the differences in the position of the upper and lower first molars are nearly as marked as in the child fifteen months old. During this period, the jaws have been gradually altering to make room in the alveolar arches for the first molars, and these teeth have been increasing in size, but they have not, as yet, made much advance towards one another. Again, in the girl six years old, the lower molars are still a little external to the upper ones, but their relative inclination is such, that by the time their crowns come in contact, they have gained their normal relation to one another.

DENTISTRY IN RELATION TO THE STATE.

By George Cunningham, B.A. Cantab., D.M.D. Harvard,
Lecturer on Dental Surgery, University of Cambridge.

(*Continued from page 15.*)

The marine service is also under the care of the Navy Medical Department. The age of the recruits for this service is from eighteen to twenty-four years. The examination, so far as the teeth are concerned, is also extremely strict, and is conducted by the medical examiner at the naval medical recruiting department. The period of service is for twelve years, with the option of serving an additional nine years if his conduct is good. It is generally understood that at the medical re-examination for this fresh period of service loss of teeth is not usually a cause of rejection. Artificers, too, are subject to much the same regulations. Since December, 1885, the Admiralty have been making the experiment of sending certain of the candidates with defective teeth to be put in order at the Dental Hospital. This is a step in the right direction, though it may be questionable how far the State is justified in making such use of a charitable institution. A recruiting officer recently informed me that from his experience he was convinced that some provision should be made for the remedial treatment of the teeth in those of both sections of the navy.

We cannot but think that it would contribute greatly to the efficiency of the Naval Department if similar requirements were made with regard to dental instruction and dental appointments, such as we have indicated as being necessary in the Army Medical Department, with, of course, certain modifications to suit the special exigencies of the Naval Medical Department.

With regard to another department of the State, there are a certain number of officials appointed by the State to perform active service abroad, frequently in places where access to the remedial treatment afforded by the ordinary dental practitioner is well-nigh impossible.

Before these appointments are ratified, a candidate has to undergo a rigid physical examination by a medical practitioner. A reference to app. O. shows the intimate relation of diseases of the teeth to the rest of the system, and therefore we are justified in asserting that an examination of the mouth and teeth ought to form a necessary part of that examination.

In order to prove the national importance of this subject, I will take as a type the Indian civil servant. All the candidates who successfully pass the first Indian Civil Service Examination, averaging from thirty to forty annually, before proceeding to India, undergo two years' probation, and are required to pass periodical examinations in special subjects of study. With a view to encouraging candidates to receive a University training, an allowance of £300 is given to all who pass their probation at some University, while a bonus of £150 is allowed to any probationer remaining in this country an additional year, and passing an examination qualifying for a degree in honours. At the beginning and at the end of this period of probation, the Indian Civil Service student undergoes a medical examination by one of the most eminent London medical practitioners. The expense of the two examinations—I believe £4 4s.—is defrayed half by the State and half by the student.

A recent case in my own practice is a good illustration of the necessity of an examination of the mouth and teeth of such students. A strong, healthy young man of twenty-one, previous to his departure for India, consulted me for the treatment of a very carious left lower second molar; as is usual, I made an examination of all his other teeth, when he learned to his surprise that his left upper incisor was abscessed. As the tooth had a large corner chipped off, I made inquiries, and found that it was the result of a blow from a cricket ball when he was nine years old, but the tooth had never troubled him. On adjusting the rubber dam, and drilling through the palatal surface into the pulp chamber, I am not exaggerating when I say that the pus poured down through the opening for about an hour, saturating napkin after napkin. I found the history of the blow substantiated by the large funnel-shaped apical foramen. Despite the fistulous opening on the gum underneath the upper lip, a large maxillary abscess had developed, into which a probe passed a distance about 1¾ inches. Such an accumulation of pus aud tissue *débris* might at any moment have become a very fertile soil for the growth of organic poisons, aad thus act as a focus from which the general system might become most seriously affected; as, for example, by ending in pyæmia and possibly death. I ask you to think what might have been the result had this patient gone to India, where he would be subject to new climatic influences, to changes of diet, and possibly to unsanitary conditions, carrying occluded in his jaw such a charge of pathological dynamite.

Since the education of such a student represents the investment of so much national wealth, from its being carried out at the expense of the State, it seems clear that in the interests of the State, as well as those of the individual, that a careful examination of the mouth and teeth should form part of these medical examinations. If the medical examiner does not feel justified in himself accepting the responsibility of performing this duty, he ought surely to point out to the authorities the necessity of a dental practitioner being appointed to make the examination.

We do not suggest that the mouth and teeth should be put in order at the expense of the State, but that the candidate for the appointment should satisfy the medical or dental examiner appointed by the State that he is well equipped as to his dental armament before proceeding abroad.

Besides the ordinary Indian Civil Service, the successful candidates to the Public Works Department, who are recruited from the Royal Engineering College, at Cooper's Hill, and the Indian Forest Department, should also be required to undergo this dental examination, as their education and appointment also represents large investment of State capital. A reference to app. Q. suggests the advisability of the Indian Office adding a further note to their excellent recommendation that defective teeth may prove a barrier to State service.

With regard to the Indian Medical Service it would be to the interest of the State that some such provision as we have suggested for the Army Medical Department, subject to any modifications which may be necessary.

As a instance of how much good may be achieved, when the necessity of a better attention to the teeth is recognised by some one in authority, we may mention the appointment of a licentiate of dental surgery to the professorship of dental surgery at the Madras Medical College. The well-known Mr. Grant Duff, as governor of that Presidency, was astounded that no provision was made there for the teaching of dental surgery, and on his representing the matter to the Home Authorities, he was instrumental in getting an appointment made by the India Office, and also appointed Professor Gould as official dental surgeon to the Governor. As similar Medical Colleges exist in the Bengal and Bombay Presidencies, we may well ask why this important new departure in dental appointments should not be followed up by similar professorships in these institutions.

With regard to H.M. Post Office, the following medical appointments have existed for some time, viz., a chief medical officer, at a salary of £880, and a second medical officer, at a salary of £428 ; and in addition to that there is an assistant medical officer, and an apothecary, who makes up and supplies the medicines prescribed. The recent appointment of a female medical officer, at a salary of £300, is doubtless due to the interest of the late lamented Mr. Fawcett in the medical education of women, and shows how readily great reforms are achievable by the higher officers of the State when they recognise the necessity for them. We would therefore insist upon the necessity of dental diseases receiving a similar amount of attention as is already extended to the medical diseases affecting these servants of the State.*

In the Metropolitan, as well as in the City Police Office, medical appointments exist, and in so far as the medical practitioner provides medical and surgical services, we would deem it advisable to extend the benefit of dental conservative treatment to these perhaps humble but useful servants of the State. At present many State servants, policemen, soldiers, and others, seek relief at the dental hospitals—surely a just ground for these institutions expecting recognition in the shape of some contribution by the State to their funds.

With regard to the department of H.M. Prisons, we fear it would be more difficult to obtain an extension of the resources of modern dentistry to the unfortunate inmates, but surely it would not be too much to require the medical practitioners appointed as surgeons to these institutions, to have that elementary knowledge of, and practice in, treatment of dental diseases, without which we think no medical practitioner should be allowed to graduate.

In conclusion, I trust we have succeeded in showing where and how dental service should form a part of that medical service already provided by the State. Of all the ills that flesh is heir to, none are more common or more universal than those proceeding from the teeth, and though, as a rule, endangering neither life nor limb, they entail an immensity of suffering, varying in intensity and duration, which in the aggregate must lead to the inefficiency of the sufferer's daily performance of his duty, whether in his capacity as a soldier or civil servant. Surely then it is not presumptuous to seek to extend the skill and appliances of modern dentistry, with its life-ameliorating and life-prolonging agencies, to the servants of the State. The means towards that end we think are twofold: firstly, a more thorough though limited dental training as a part of the education of the medical practitioner already employed by the State, and, secondly, the employment of the completely trained and fully qualified dental practitioner by the more extended resort to the remedial resources of dental science.

From the point of view of social economics, it is well to remember that where the State provides such medical service it is never intended for the encouragement and benefit of the medical profession, though undoubtedly it has that effect; nor even for the benefit of the individual, despite the obvious advantages he receives thereby; but mainly and fundamentally such appointments are made in the interests of the State itself, for the welfare of the Commonwealth. Consequently, while we would ask your support for the furtherance of the views we have put forth as dental practitioners interested in the promotion of your specialty, and while we would also appeal to your sympathy for the extension of remedial dental treatment to the civil servant, and, above all, to soldiers and to sailors, the safeguards of our empire; but most of all, and on higher grounds, we would appeal to you to do your duty as citizens of a great State, by doing all in your power to promote those dental reforms which your special knowledge enables you, of all others, to recognise as all-important, and thereby to contribute your quota to increasing the efficiency of the service of the State.

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* An officer of the post office who has the knowledge necessary to give his opinion weight, writes me as follows: "The whole of the employees of the Post Office receive medical advice and medicine gratis, and when requiring their teeth seen to they are sent to a dentist outside, who charges them at a very low rate. I quite think a dentist should be appointed to do the work in the office."

(*To be concluded.*)

DISCUSSION UPON PYRROHŒA ALVEOLARIS, BEFORE THE ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE PRESIDENT (Mr. W. Bowman Macleod) said :—

The disease for some time known as Rigg's disease, and now better named Pyorrhœa Alveolaris, has long been known, but has only been much debated during the last twenty years by Riggs, Mills, Albrecht, Wedl, Salter, Tomes, Arkovy, Rerwinkel, and others more or less known in the scientific walks of Dentistry. I do not propose to enter an opinion as to its pathology or etiology, not yet to discuss the various method of treatment or remedies advocated by these gentlemen, but will confine myself to a simple statement regarding the use of sulphur as a curative agent in this lesion. Whatever may be our opinion as to the part which tartar plays in this disease, I think we are all agreed that tartar being matter in the wrong place, it should, if present, be thoroughly removed, so as to give any subsequent treatment the best possible field for its recuperative action. This being done, I find that the bi-daily cleansing of the teeth and gums with a tooth-powder composed of flowers of sulphur and precipitated chalk, will very soon restore the parts to a healthy condition, the pus secretion will cease, and the teeth become firm in their sockets. Whether the tartar be the cause, or only a concomitant, or the pyorrhœa be owing to a perverted condition of the mucous secretions, sulphur will, and does, act beneficially.

Its therapeutic action is stimulating and antiseptic, and it is likewise a solvent of calculus. If it contains a little free sulphurous acid, which it frequently does, so much the better.

As I have said, it is stimulating, antiseptic, and a solvent of calculus, and it has this further, and what, I think, very great merit, viz., that it can be regularly and thoroughly applied by the patient. I have now been using it for over a twelvemonth, and have reason to be satisfied with its uniform success ; and, as I recommended it to the members of this Society in March last, I will be pleased to hear how it has succeeded with those who have given it a trial.

Dr. Smith said he had not been present at the last meeting, and his being called upon to make any remarks upon this interesting and somewhat important affection to-night was unexpected. In the first place, he would say that he believed the mixed powder of sulphur and magnesia, brought before the Society by Mr. Macleod, was, in all probability, destined to be of much service, not only in pyorrhœa alveolaris, but in other affections of the mouth. The rationale of its action seemed founded upon tangible principles, as there was no doubt that sulphur and its combinations had played a prominent part in the *rôle* of therapeutics as applied to similar affections. With reference to the pathological nature of pyorrhœa alveolaris, or Rigg's disease, two theories might be advanced—first, that it commenced from without ; and second, that it commenced from within. Among those cases commencing from without might be classed such as originated in the alleged irritation caused by the deposit of tartar, or in inflammation of the gum and mucous membrane ; and among those originating from within, the occurrence of alveolar caries would, in all probability, be found a common cause. Tartar and inflammation of the gum did not always give rise to the symptoms distinctive of pyorrhœa alveolaris, but caries of the alveolar walls invariably did so. The anatomy of the parts in a great measure accounted for this. It was admitted in surgery, that, as a general rule, pus seeks the nearest and easiest mode of outlet, and if this were an affection of the gum and submucous tissue, it would manifest itself to a proportionately greater extent beyond the margin of the alveolar cavity than it very frequently does. But, in a large number of cases, the symptoms during its continuance, and the appearance and lesions of the alveolar walls after its existence, showed that these had been the structures principally concerned in the disease. This accorded with Dr. Smith's own observations in this affection, to which he had for long paid considerable attention ; and also with the morbid appearances described by most writers on this disease. Dr. Smith had said that *prima facie*, the disease commenced with, and consisted in, caries of the alveolar plate ; and that the tartar deposit and inflammatory appearance of the gum, were possibly of a secondary nature. It might be argued that the alveolar plate was not altogether the kind of bone in which caries occurred ; that necrosis and rapid separation of the dead part would be more likely to take place there than a long protracted ulcerative process. But this reasoning was here to be met in the local modifications of the bony tissue. Necrosis was, no doubt, the common affection met with in compact bone, and caries in the cancellous variety. This did not arise from the disease in its ultimate pathology being different in the two cases. In necrosis, the result of the inflammatory action and exudation was death of a piece of the bone by obliteration of the vessels contained in the Haversian canals, owing to the unyielding nature of the mass of compact bone surrounding them. In cancellous bone, room was afforded for dilatation of the vessels, so that complete stasis was not occasioned by the exudation. And in the very attenuated alveolar walls, the pressure outside the vessels would be comparatively diminished also, and might explain the more frequent existence of caries there.

The question whether this caries, or rather what is called rarefying osteitis, is a primary or secondary lesion, was difficult positively to decide. Cornil and Ranvier assert that it is secondary to fatty degeneration of the contents of the lacunæ, and subsequent inflammation and destruction of the trabeculæ in their vicinity, which then form so many centres of suppurative inflammation. While this is the opinion of one set of pathologists, others believed that inflammation precedes this fatty degeneration, and may be of a simple, scrofulous, tubercular, or syphilitic origin. At all events, the symptoms described by authors who have written on this disease, would indicate, in the separation of the dento-alveolar structures, the channelling of the sockets and disappearance of their bony walls, that one form at least was probably due to alveolar caries.

It seemed very uncertain whether the deposition of tartar was not, in many cases, a result rather than a cause of the disease ; the dark coloured and hard tartar was always found in much less quantities than the softer and white variety, and probably had been slowly deposited and stained in some manner due to this longer exposure of its surface. This dark tartar, too, was much more frequently found at the necks of the upper teeth than was the white variety. It was also found on the denuded fangs of teeth, which denudation, again, had probably been brought about by a form of alveolar caries, possibly without suppuration, as this was known to occur in other parts of the skeleton, and sometimes appeared more like ordinary absorption of the bone than any other form of disease.

Mr. Wilson said he quite agreed with what Dr. Smith had just said. The initiative was always periostitis, followed by disintegration of the alveoli, so that it might be the result of either local or constitutional causes.

He had lately advised the use of the powder recommended to their notice by Mr. Macleod, but could not yet say with what success.

Mr. Macgregor said he had used Mr. Macleod's prescription in one or two cases, and had found most marked and beneficial results following its use.

Mr. Durward spoke favourably of the sulphur powder, and said he had also found it a good powder for use where artificial teeth were worn above stumps.

Mr. G. W. Watson thought that if this mixture advocated by Mr. Macleod, used as a tooth powder, gave satisfactory results in the treatment of pyorrhœa alveolaris, it would be a great boon to us, as our patients would be able to take in hand their own treatment. In this disease, there is a pocketing of the gum round the teeth, softening and destruction of bone at alveolar margins, and an oozing out of a serous or sero-purulent secretion, which is laden with micro-organisms. Bacteria, micrococci and bacilli (allied to algæ). This secretion seems to be derived from the connective tissue of the parts, and is thought to induce the same condition in adjacent healthy teeth by infection. He had tried to produce the disease in the dog by scraping its gum and spreading some of the secretion over it, but failed to get any result, though this might not be the case were a human subject inoculated.

The first step in the treatment of this disease is to scrape the softened bone and remove all the tartar, which, however, is not always present. In reference to this tartar, there is a variety found pretty far up on the root, of a dark greenish colour—especially in cases where there has been considerable destruction of the bone at the alveolar margin—this was, he thought, derived from the exudation and not from the saliva.

The same condition was observed, as a result of chronic alveolar abscess, where no sinus was present, and he had repeatedly found, on extracting such teeth, nodules of this dark tartar at or near the apex of the root, where no saliva could possibly reach.

The presence of micro-organisms in the secretion of the gum pockets must tend to keep up a great amount of irritation, if they are not the direct carriers of infection themselves, and it is, therefore, important to get rid of them as soon as possible.

They are divided into two groups—ærobian, those requiring oxygen for their development; and anærobian, those that do not require oxygen for their development. A mixture of hydrogen peroxide and mercury perchloride, injected repeatedly into the gum pockets, destroys both varieties, and this should be followed up with aromatic sulphuric acid, to cause granulation of diseased parts. This treatment, carried out every three or four days for several weeks, generally results in a speedy cure. It was to be hoped, however, this new cure would render this somewhat elaborate process unnecessary.

Mr. Amoore, in reference to Mr. Watson's recent remark, that the presence of tartar is not invariable in this disease, said he remembered Mr. C. S. Tomes citing a case in point during a discussion which bore largely upon this subject, at the International Medical Congress of 1881. It was the case of a patient aged twenty-five, in which he extracted all the remaining teeth, and on many, which were distinctly affected, there was no trace of tartar. He had also heard the suggestion respecting the serious origin of the hard greenish variety once or twice before, and he thought he was right in referring it on one occasion to Mr. Coleman in one of his lectures. He (Mr. Amoore) had found it very high up on the roots of the teeth, very commonly upon badly inflamed stumps, apparently beyond the reach of the saliva, though he could not recall having found any directly enclosed in an abscess sac.

CASUAL COMMUNICATIONS,

Contributed to the Odontological Society of Great Britain.

MR. J. H. MUMMERY showed and presented to the Museum four models, together with the appliances used, illustrating the progress of a regulation case of a rather unusual kind.

The patient, a young lady aged fourteen, of very delicate constitution, had no molars in the upper jaw, these teeth having been extracted in consequence of severe and long continued periostitis. There was great irregularity of the teeth anterior to the bicuspids, with very prominent canines; and the problem was how to act upon the bicuspid teeth in the absence of molars. This was, however, successfully accomplished in the course of about twelve months by the following means. A gold plate was made, capping the first bicuspid, and carried back along the alveolar ridge on either side, and terminating in a hook to which was fastened a rubber ring. The ring was passed round the second bicuspid on either side, and held down by a catch on the plate halfway between the tooth and the point of attachment of the rubber ring, to procure a horizontal traction on the tooth.

The second bicuspid having been brought back, it was capped, and the same apparatus was brought to bear on the first bicuspid, from which the capping was removed. The reduction of the bicuspids having been effected, the other teeth were brought into position by a simple vulcanite plate with piano wire bands.

Mr. Mummery also exhibited an electric lamp for examination in the mouth, worked by a very neat and compact form of chromic acid battery supplied by Messrs. Meyer & Meltzer. It required to be recharged about every ten days, and this was very easily done, only one solution being used.

Mr. W. Hern read notes of a case of diplopia and supraorbital neuralgia caused by dental irritation.

The patient, a man aged fifty-six, was first seen by Mr. Lawson at the Ophthalmic Hospital, Moorfields, on July 23rd. He then complained of diplopia, which came on five days previously, with the appearance of "clouds of smut" before both eyes. This was accompanied by severe localised pain about the left frontal eminence. Says he is not subject to sick headaches. Tension is normal in both eyes, and vision is good. There was no movement of adjustment when either eye was alternately covered and uncovered. No history of syphilis.

Paralysis of the left superior oblique muscle was diagnosed, and he was ordered five grains of Pil. Saponis Comp. at night for the pain. Dental irritation was suspected, and a carious upper molar on the left side was seen. He was therefore advised to apply at the Dental Hospital of London for further treatment.

On August 3rd he presented himself at the Dental Hospital, bringing a note from Mr. Lawson mentioning the ophthalmic trouble, and requesting that a careful examination of the mouth might be made. This was accordingly done, and it was found that all the teeth were sound with the exception of the second left upper molar and wisdom tooth. The former presented a moderately large distal cavity at its neck which freely exposed the pulp ; the latter presented a small mesial cavity which had not involved the pulp. A few of the teeth, both upper and lower, were affected with a slight amount of recession of the gum at their necks, but were not sensitive to cold or contact of instruments. The patient complained especially of the supra-orbital pain on the left side, which was so severe as to interfere with his rest.

The left upper second molar was extracted, and the mesial cavity in the wisdom tooth filled with a gutta-percha stopping. A week later he reported that he was quite free from pain, but the diplopia continued.

On October 29th, Mr. Hern received a note from Dr. W. J. Collins, Mr. Lawson's assistant at Moorfields, in which he said that the patient had continued quite free from pain, but still had diplopia on looking downwards.

Mr. Hern added that the case resembled in some respects one brought before the Society some months ago by Mr. Hutchinson. In both cases dental irritation caused both motor and sensory disturbance in the ophthalmic region, and in both the sensory trouble cleared off much more quickly than the motor. In the case just reported, the diplopia was now not nearly as bad as it was when the patient was first seen, and there was every probability that it would in course of time entirely disappear.

Mr. Hern also showed a mouth mirror, with a glass fixed at an angle of about 225°, which he found very useful when filling buccal cavities. The ordinary mirror, with the glass attached to the handle at an angle of about 135°, was very inconvenient for such cases, since the handle came across the mouth and in the way of the work.

Mr. S. J. Hutchinson said that he felt greatly interested in Mr. Hern's case. As that gentleman had pointed out, it corresponded very closely with one which he (Mr. Hutchinson) had brought before the Society not very long since.* In that case, irritation of the dental branch of the fifth nerve was reflected on to the third nerve in the orbit, and set up spasm of the *levator palpebræ*, causing the condition known as lagophthalmus ; in Mr. Hern's case, the nerve affected by reflex action was the fourth, and the result was not spasm, but paralysis of the muscle supplied by it. In his case, as in Mr. Hern's, the neuralgia from which the patient had suffered disappeared at once on the extraction of the tooth which was the cause of the mischief ; but the motor disturbance, the muscular spasm, cleared off very slowly, and did not entirely disappear for over six months. He had no doubt the result of Mr. Hern's case would ultimately prove equally satisfactory. He did not feel quite sure whether Mr. Hern was wise in putting a gutta-percha filling in the wisdom tooth. Was he quite sure that there was not some irritation going on from the pulp of that tooth? Certainly, if the motor trouble continued, he (Mr. Hutchinson) should advise its extraction. It would be remembered that in his own case he was induced to leave an amalgam filling, and that recovery did not take place until the tooth containing it was extracted, when a minute exposure of the pulp was found beneath the filling.

Mr. Newland Pedley remarked that all dental surgeons, and especially those holding hospital appointments, saw, from time to time, cases of eye lesions dependent on dental irritation, in which the removal of bad teeth or stumps effected a cure. At the same time, such cases required strict investigation, and the relation of cause and effect must not be too readily attributed to every improvement following dental operations. A case which had recently come under his notice at Guy's Hospital illustrated this fact, and was not without its comic aspect. A young woman came amongst the dental out-patients complaining of very intense pain in her left eye, and stating that the sight of the organ was so much affected that she had lost all perception of light. The roots of the left upper first molar were removed, and when the patient returned a few days afterwards she said the pain had decreased. So far, the case read like one of amaurosis dependent on dental irritation. But the patient was sent on to the ophthalmic surgeon, who came to the conclusion, after examination, that the loss of vision was imaginary, as was clearly proved by the fact that she read small print at a distance with a strong lens of short focus placed in front of the good eye—reading, that is, with the eye which she had declared blind. Obviously, the improvement that followed tho dental operation was imaginary.

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* Trans., Vol. XVIII., p. 6.

Mr. W. A. Hunt thought that all dental practitioners must be aware, from constant experience, that ophthalmic troubles did clear away after the extraction of bad teeth, and that they were not far wrong in attributing to the operation and the improvement the relation of cause and effect. He did not mean to say that it was common to meet with cases of actual organic disease of the eye as the result of dental irritation, but cases of functional derangement due to this cause were frequently met with ; whilst the fact shown in the experiments of Von Hippel and Grünhagen, quoted by Mr. Power in his paper, that irritation of the fifth nerve would increase the intra-ocular pressure to the extent of several inches of mercury, was clear proof of the possibility of more serious mischief.

He should be glad to hear if any of the members had met with cases of paralysis of the seventh nerve depending on dental irritation. He had met with three such cases which were distinctly benefited by the removal of bad teeth. He thought that having regard to the close anatomical relations of the fifth and seventh nerves, some such influence might well be expected, though, so far as reported cases went, the seventh seemed to be much less liable to be affected in this way than its neighbours.

Mr. F. J. Bennett said he could not agree to the assertion just made by Mr. Hunt to the effect that it was the constant experience of dentists that lesions of the eye were cured by the removal of diseased teeth. In his experience such cases were rare, and he agreed with Mr. Pedley in thinking that cases of this sort should be submitted to the most careful investigation before assigning the relation of cause and effect to dental and ophthalmic lesions co-existing in the same individual. As an illustration of this, he would mention a case which occurred at the Dental Hospital some years ago, and which had been several times referred to at the Society's meetings. A girl applied at the hospital who had fractured her right upper central. The pulp was removed, and the root prepared for a pivot. In doing this an instrument passed up the canal probably passed through the apical foramen ; certainly the patient complained of great pain. When she next attended she complained of pain in the eye of the same side, and was found to be suffering from iritis. She was sent to Mr. Lawson, at the Middlesex Hospital, for treatment, and that gentleman gave it as his opinion that there was no connection between the tooth and the eye inflammation, but that the occurrence of the latter at that time was accidental. The root was, however, extracted, and the patient ultimately got well. But, in spite of Mr. Lawson's statement to the contrary, this case had been several times quoted at the Society's meetings as an example of reflex action. He (Mr. Bennett) thought that the opinion of a specialist who had had a large experience of eye diseases, should be preferred to that of those who had no such knowledge or experience; and, without wishing to throw any doubt on Mr. Hern's case, he did say that cases of eye disease caused by dental irritation, far from being common, were in his experience exceedingly rare, and that the case to which he had referred ought not properly to be considered one of them.

Mr. S. J. Hutchinson thought that if those who had any doubts about the direct relationship between diseases of the eye and those of the teeth would study the paper on this subject read before the Society by Mr. Henry Power, about two years ago, they could not fail to be convinced.

Dr. Walker remarked that he had been conversing with Mr. Power that afternoon on that very subject, and Mr. Power had told him many more cases of this character had come under his notice since he wrote the paper referred to. He spoke of having met with eight such cases recently.

Mr. Walter Coffin said, with reference to the mouth mirror shown by Mr. Hern, that he had one in his possession which had been in use by his father for thirty years. It had glass on both sides, fixed at the same angle as that shown by Mr. Hern, and was designed for the same purpose.

Mr. Storer Bennett said he remembered seeing a mirror such as Mr. Coffin had described, with glass on both sides, in use five or six years ago, but he could not then remember by whom it was used.

Mr. Hunt said that by pure chance he had brought a very similar mirror with him to show at the meeting. It had a bayonet handle made of pure silver, which could be bent to suit individual cases. With this he could hold the cheek away and obtain access to buccal cavities without any shadow.

Mr. Hern replied that the cavity in the wisdom tooth was a small and shallow one on the front of the crown, not at all likely to give rise to any nerve irritation. The fact that the neuralgia had entirely disappeared showed, he thought, that there was no reflex disturbance going on at present. The patient was seen and sent to him by an ophthalmic surgeon who would not have overlooked any other cause, and this placed the case on quite a different footing from that referred to by Mr. Bennett. Many undeniable cases had been reported by Sir Charles Watson, Messrs. Salter, Tomes, and others, in which strabismus and various other ophthalmic lesions had been cured by the extraction of carious teeth. Mr. Power's paper contained numerous cases of the same kind.

With reference to the mouth mirror, he thought that the fact that it had occurred independently to so many operators showed that it was worthy of notice.

Mr. J. H. Redman related the following case of extensive alveolar abscess and its consequences:—

A girl aged twenty-two came to him with a large abscess about the angle of the jaw. It had opened externally, and there was abundant discharge, together with considerable swelling and induration of the tissues. With some difficulty he forced open the mouth, and found that the source of the mischief was an impacted lower wisdom tooth; but in order to reach this he was obliged first to extract the second molar. He was then enabled to extract the wisdom tooth. The abscess soon closed and the swelling subsided, but the patient began to complain of very severe neuralgia affecting that part of the face. Mr. Redman removed the roots of the first molar as being a possible source of irritation; but this did no good, and he had come to the conclusion that the pain was due to the implication of some nerve branch in the cicatrix. This was firmly adherent to the jaw, and he had no doubt that it pressed upon some branch of the seventh nerve just where it crossed the bone. He had suggested to the medical man in charge of the case that he should cut down and free the cicatrix, but up to the present his suggestions had not been acted upon.

Mr. Redman also showed a curiously deformed deciduous central.

Mr. Hunt showed a model of the lower jaw of a lady, in which the whole of the alveolar border in the molar and bicuspid region on both sides had been absorbed as the result of pressure.

All practitioners were familiar with the fact that cotton wool packed between the teeth would separate them. He had a remarkable example of the extent to which this separation might be carried in the case of a lady who came to him some time back with cavities in the contiguous surfaces of two lower molars. As the teeth could not be preserved, and the patient would not consent to have them extracted at the time, Mr. Hunt advised her to put a small piece of cotton wool moistened with eau de Cologne into the cavity daily, and to come again on the first convenient opportunity. She did not return for twelve months, and then, to Mr. Hunt's astonishment, instead of the small space previously existing between the teeth, there was an interval in which he could place his thumb, caused by the constant packing of plugs of cotton wool into the space.

The case illustrated by the model was another example of the mischief that might arise from this cause. The patient was a lady, aged forty, who had worn for some time a complete upper and partial lower plate. The latter, which carried all except the six front teeth, beginning to pain her, the patient put some cotton wool under it to ease the pressure, and continued the practice, gradually increasing the amount of wool, until the state of things shown by the model was the result.

The President said that he had no doubt most of those present had met with cases more or less resembling those described by Mr. Hunt. He himself had seen very similar results produced by the injudicious use of the plastic gutta-percha sold in the shops for stopping purposes. One patient produced a hole in the alveolar process by adding this to the under surface of a lower frame. And quite recently a lady came to him with a space between the upper centrals, equal in breadth to one of them, and caused by gutta-percha used in the same way as the cotton wool had been by Mr. Hunt's patient. The gap was so unsightly that Mr. White was obliged to close it with a supplementary tooth.

Mr. Willoughby Weiss said the case just mentioned by the President reminded him of one very similar which had occurred in his own practice. A patient who came to consult him about some other matter, remarked that he could not make out what had become of a tooth in the lower jaw, for he was sure it had not been extracted. On examination, Mr. Weiss found a space between the bicuspids large enough to accommodate another tooth; and on questioning the patient it became evident that this had been caused by packing gutta-percha between the teeth with a view of stopping a small cavity in one of them.

(*To be concluded.*)

A Modification of the Usual Plan of Filling with Amalgam.—Dr. Rees demonstrated before a New York Society a somewhat novel procedure in amalgam filling. After excavating the cavity as usual, but without depending much upon undercuts or retaining points, he mixes the amalgam ready for use; then dries out the cavity with the chip-blower and warm air, keeping it dry by placing bibulous paper around it. He then puts into the cavity and against its walls some of Weston's oxyphosphate cement ; and packs the amalgam carefully in, squeezing out all the superfluous material and covering the whole surface of the cavity. After that the edges are trimmed all around, so that none of the oxyphosphate is exposed ; then finish the filling in the usual way. He finds that teeth filled in this manner keep their colour, no matter if the pulps are dead ; and also that there is no discolouration of the amalgam between the wall of the tooth and the filling proper. As we all know, oxyphosphate cement, properly mixed, sticks to the walls of a cavity very nicely, and, by packing the amalgam in with it while it is soft, we make a union of the two materials, and the shrinkage, if any, is outside, where it does no harm. He has also used the same method for gold filling. Having the cavity properly prepared, he mixes a little oxyphosphate cement and covers all the walls of the cavity with it ; then packs gold into the cavity, bringing it nicely into the undercuts, being careful to prevent the cement from touching the upper surface of the gold. By the time he has that well condensed the oxyphosphate has become perfectly hard, and he takes a fine bur and trims the edges perfectly clear, so that none of the oxyphosphate is exposed ; then goes on and finishes the filling.

British Journal of Dental Science.

LONDON, JANUARY 15, 1887.

In reviewing the past year, one is struck by what may be called almost an absence of stirring events in the Dental world. And yet, 1886 will be looked back upon as a very important epoch, for great consolidation of the profession has steadily, slowly it may be, yet surely taken place. There has been a steady advance in the direction of progress, and much ground has been covered ; and things which in the far distance seemed "unreal, impossible, yet ever yearned for" now "cast shadows before" in earnest of their following. England has, and not unduly, prided herself upon the steadily improving educational and social *status* of her dentists, she established a qualification which stamps its holders as accomplished practitioners ; she has, in the person of our Gracious Queen, set a sign-manual upon the profession to which we belong, and ordained that its leading members may rank as knights ; and while, in thus exalting a few, she graces the many. But, much as the social side of dentistry interests us, it pales beside the more burning question of professional excellence, and our status as skilled craftsmen. Taciturn to a fault, we English dentists never speak or commit ourselves to the "horrid imprisonment of print" unless we think we have something worth the hearing, or which warrants the spilling of ink, and spoiling of paper, and so it arises that the advances which obtain in English views concerning dental pathology, chemical and operative denistry are little known or understood outside the very narrowest circles of English practitioners. In the Congress which will take place this year in America, there will be an opportunity for our leading men to wipe off the slur which is by some put upon English dentistry, and to show that, although we do not air ourselves upon showy brass plates as "English Dentists," yet, that we bow to none in our standards of excellence.

We watch with satisfaction the growth of that important body, the British Dental Association; whether its lines of policy are always quite in the groove we should support, or not, does not in any way militate against the useful work it has done in the past, and will, we trust, do in the future. One of the most hopeful signs of the past year has been the energy displayed in the development of the hospitals devoted to Dentistry. Both in London and the provinces we now possess excellent dental hospitals, so that both students and practitioners possess very many and valuable opportunities for acquiring or perfecting a scientific knowledge of Dentistry. As yet, the promotion of Post-Graduate classes for already legally-qualified men has not been made an accomplished fact. The want is sorely felt. Many there are who, though licensed to carry on Dentistry, yet do not possess any scientific basis for their modes of practice; and who, although skilful workers, are only indifferent diagnosticians. Such men would eagerly jump at chances of bettering their condition, by the acquisition of sounder and wider information in these professional subjects. Although we are forced to admit that many practical difficulties exist in the carrying out of the scheme for Post-Graduate classes, we still hope it will prove to be a possibility of the future.

The opening of the classes of the National Dental Hospital of London, to ladies, may be noted as a possible factor in promoting the entrance of ladies into the profession. It is very doubtful, at present, whether ladies will be able to enter the lists as against their brothers and cousins, since they labour under such great restrictions, and are hampered by social opinions. We have, more than once, hinted that ladies have many openings in Dentistry; and even if they find themselves unable to qualify and practise side by side with the other sex, they will, we believe, prove themselves valuable auxiliaries.

Changes which have occurred in the educational regulations imposed upon students preparing for a medical or surgical diploma, cannot but react upon dentists. We have always held, and have from time to time pointed out, that dentists should be an out-branch of the surgical tree—surgeons by education, and dentists by practice ; and hence it is with pleasure that we see the increasing number of students who, year by year, acquire a surgical diploma. It has been urged, by one of the most clear-headed and eloquent of the leaders among dentists, that quite the converse to the above order of things should obtain ; that, namely, a dentist should be a dentist first, and after that a surgeon if he choose.

From a mere curriculum point of view, this statement has, we think, been shown to be wrong and misleading. The Dean of the London School of Dental Surgery has made very plain that the man who is working for the L.D.S. only, is, in point of fact, placing himself in the position of the traditional boy, who found the acquisition of the alphabet, "going through so much to gain so little." He (the dental student) is obliged practically to fulfil the major part of the surgical curriculum, and, with but a very slight extra effort and expenditure of time and money, he acquires the additional diploma. The double qualification, under the conjoint examining board, should be the guarantee of general proficiency in professional matters; while the L.D.S. should, we venture to submit, be taken as earnest that he who has obtained this diploma, has shown himself able to apply this general knowledge to the special work of Dentistry, and has further acquired, over and above the surgical handicraft, a special skill in treating dental troubles.

There are doubtless some subjects at present incorporated in this scheme of the conjoint board which might be made optional and alternative with purely dental subjects for dental candidates. Were such alterations to be made, a triple qualification of M.R.C.S., L.R.C.P., L.D.S., would result, which, since the former two would be involved as a necessity in assuming the L.D.S., would with profit be cut down into a simple but honourable L.D.S. And again, if the agitation for a meritricious M.D., be listened to, and every qualified man bud forth into a doctor of medicine, *sine* a University career, we should come in for our share of the booty, and blossom forth into M.D.; L.D.S.'s, a title which we venture to think our *ἀριστοὶ* would soon curtail to "L.D.S." It is a world of change, and a fashion is prevalent for empty names and high-faluting titles which are only too often striven for by men who have shown themselves conspicuously incapable of acquiring really honourable titles by genuine hard work and pluck and endurance. Perhaps, in 1888 we shall have fresh developments in this direction.

THE DEATH OF MR. CATTLIN, F.R.C.S.—It is with the utmost regret that we chronicle the death of one of the most distinguished members of our profession. Mr. Cattlin, to whose energy and *personnel* we owe so much, was one of the original founders of the Odontological Society. We shall in our next issue furnish our readers with a brief memoir of this distinguished man; for the present, we can only mourn the loss of one the like of whom we can so ill spare.

PETITIONING FOR ENFRANCHISING M.R.C.S.'s IN THE BODY POLITIC OF THE ROYAL COLLEGE OF SURGEONS.—All "members" in the United Kingdom have received a form of petition for their signature, praying that members of a certain standing may be granted right to vote for the election of members to sit on the council, to vote by proxy, to exercise right of inspection and control over the College's funds. We trust all members will duly sign. Had the L.D.S.'s more push in their composition, they also would, at this epoch, make common cause with the members, and insist upon their recognition in College councils.

DEATH FROM A SAFE ANÆSTHETIC.—Bromide of ethyl has been vaunted by some as possessing that most desirable quality in a narcotic—immunity from danger to life. Bromide of ethyl, however, shares with the other haloid salts their dangers and disadvantages. We learn from an exchange that the assistant to a dentist in Brooklyn, in October last, administered bromide of ethyl to a female patient, and her death ensued. Unfortunately, no particulars are given, but the tale is long enough and full enough to tell its moral, and to impress upon all dentists that extreme danger of undertaking the administration of anæsthetics (if the use of nitrous oxide be excluded), and especially when single-handed and when the patient is in the sitting posture. Under these circumstances there is always danger, sometimes death.

WHAT DO YOU THINK ?—A correspondent of the *Ohio State Journal of Dental Science* wishes to know whether the case narrated below is a freak of nature or a common occurrence: Miss S—, eleven years of age, called at my office to have a second inferior molar extracted. On examination, I found all the teeth fully erupted except third superior molars, which showed signs of eruption. The inferior third molars were fully erupted and well developed. The child showed no signs of development other than the precocious development of the teeth.

RESECTION OF SECOND BRANCH OF FIFTH NERVE AT FORAMEN ROTUNDUM.—The patient suffered from intractable neuralgia of several years' standing, affecting the superior maxillary division of trifacial nerve. The patient being etherised, all ordinary means failing, resection was determined on by Professor Garretson, the anterior face of the antrum was exposed, and the infra-orbital nerve was dissected from the flap and held by forceps. The boundary of the sinus was then removed, the dental engine was used, while the bur, directed by the line of the nerve, cut away the floor of the canal, and so permitted the branch to fall into the antrum. The sinus being carefully cleansed of clots, a raspatory was used to scrape a line upon the antral roof, a dull bur was put in the place of the sharp one heretofore used, and the marked and rasped space was cut away, exposing the nerve and eye appendages. To enter the spheno-maxillary fissure, conical bur was used, with fine short blades, and was revolved to the extent of the power of the engine, some fifteen thousand revolutions to the minute. The antrum was again cleared of blood-clots and its posterior face made to define itself clearly in the sunlight; and the bur was reintroduced into the cavity, and in a single moment the fissure was opened. The nerve was isolated, and the round foramen defined by means of a delicate fenestrated probe, which, guided by the nerve it encircled, was pushed inward and upward until it struck the base of the skull. The nerve-trunk was then cut by means of a tenotome or fine curved bistouri. The patient made a very rapid recovery.

CAN ARTIFICIAL TEETH BE DISTRAINED UPON?—The *Standard* for Jan. 7th contains the following novel appeal: "At the Lambeth Police Court, a respectable-looking old man came before Mr. Chance and asked his advice with regard to the seizure of property by a broker.—Mr. Chance: What is the property?—Applicant: I want to know if a broker can seize false teeth under a distraint?—Mr. Chance: It is a novel application. I should hold that the broker would be acting wrongly, for the teeth would be necessary for use, and would be, as a rule, in the mouth, excepting when the owner was in bed and asleep.—The applicant, who did not say positively that the teeth had been taken, thanked his worship, and said he would go and see the broker." The question is, however, not unique. for reference to our last volume will show that a somewhat similar case was decided in the American law courts in favour of the wearer of the denture.

SORE MOUTHS OF INFANTS.—This is often due, says the *Medical and Surgical Reporter*, to the rough and careless swabbing out of the mouth of the child by the nurse, who uses the corner of a coarse towel, and proceeds as if she were scrubbing the kitchen floor or back stairs. In Prague, since Obstein has forbidden the washing of the mouths of infants born under his care, stomatitis has almost disappeared from the lying-in, whereas previously fifty-two per cent. of the infants born there, and under ten days old, were afflicted.

Double Dislocation of the Jaw from Vomiting.—This most unusual accident is reported by a New York medical paper. A medical man was summoned by the alarming and grotesque announcement that "Mary had been vomiting her jaw out." And, surely enough, Mary had. It is not an uncommon event for a patient to be brought to a dentist with a unilateral dislocation, and in some cases the dentist is unfortunate enough to produce a luxation in the course of his ministrations. The manœuvre necessary for the replacement of the bone is simple enough, and we doubt not most of our readers know it well: guard the thumbs with a stout towel twisted round them, and then press with them upon the lower jaw as far back as possible, and lift up the chin. The jaw goes in with a click.

The Death of Dr. Abbot of Berlin.—It is with much regret that we chronicle the loss of Dr. Abbot, who was one of the great exponents of modern dentistry in Germany. He was born in Maine, and graduated at the Baltimore College of Dental Surgery in 1851, leaving shortly afterwards, the same year, for Berlin, thus becoming one of the pioneers of modern dentistry in Germany. He drew into his professional life the teachings of Harris, and never, in the long course of his extensive practice, seemed to lose that influence. While active in interest in every new step that promised advancement, he was slow to adopt changes, preferring the old way. He was conscientious, and no one could help admiring his strong devotion to principle in refusing to be tempted to use materials which he might regard as objectionable. While he seemed thus to be opposed naturally to innovations, his courage was equal to any change that coincided with his judgment, though it might be in opposition to established rule. This was manifest in his faithful advocacy of tin and gold foils combined in one filling. He disclaimed any originality in this, but accepted it, and it was through his persistent effort that this has come to be recognised as a valuable addition to practice. Many of Dr. Abbot's papers have from time to time been reproduced in our pages. They showed great facility and not a little originality. Dr. Abbot's loss will be deeply felt and mourned. Courteous to all the poor, nay, royalty had no more respect and no more rudeness than fell to the lot of his meanest patients. While many were sycophants, Abbot would none of it, and equally did he avoid that other extreme into which some of his countrymen are inclined to fall *brusquerie* towards those in high places.

Abstracts of British & Foreign Journals.

THE DENTAL ADVERTISER.

"MUCH OR LITTLE WATER IN VULCANISING?"

By Geo. B. Snow.

> "I noticed recently in one of our leading dental offices that in vulcanising a case the boiler was filled nearly to the brim with water. If those who still follow that method would put but a half-dozen spoonfuls in a steam-tight boiler, even placing something under the flask to keep it from the water, they may discover three advantages in the device: a tougher plate; absence of much disagreeable odour, and models and investments disintegrated. Give a little longer time for vulcanising by this method. Those who offer new machines for accomplishing this purpose may not thank me for this suggestion."—*Dr. F. W. Williamson, Redwing, Minn., in Items of Interest.*

The above is right in one sense, and wrong in another. The caution extended to "give a little longer time for vulcanising," gives the clue to the superior qualities, if any there be, to the steam-vulcanised product. The mixture of air and steam in a "steam-tight" boiler, is not so good a conductor of heat as is pure steam. The flask will not be as hot by several degrees when resting in the steam-space as when placed under water, and it is undeniably the fact that a low temperature and long time produces the best results in vulcanising. Hence, if two flasks are placed in the same vulcaniser, one in the water and one in the steam-space, there will be quite a difference in the quality of the rubber vulcanised in them, both being subjected to the same time, and apparently the same heat.

Covering the flasks with water arose probably from its being found that there was less difference in the hardness of the rubber in the different flasks when this was done. It is well-known that such a difference exists, and is quite noticeable when the contents of the upper and lower flasks are compared when three flasks are put in the vulcaniser, one above the other, even when all are covered by water. The reason for this is, that water is a poor conductor of heat, its temperature being equalised mainly by circulation or "convection." The space between the flasks and the walls of the vulcaniser being narrow, circulation of the water is necessarily obstructed to some extent, and the lower flask, receiving the heat directly as it is transmitted through the bottom of the vulcaniser, becomes a few degrees hotter than the upper one. If these three flasks were placed in the vulcaniser with "a few spoonfuls of water," this difference of temperature will be no less, but rather greater, if they were in an atmosphere of mixed air and steam. If precautions are taken to expel all the air, the temperature will be uniform throughout the vulcaniser, and the vulcanising uniform in all the flasks. As vulcanising is usually done with more or less air included in the vulcaniser, the actual temperature of the water may be as much as twenty degrees higher than the indication of the thermometer, which only gives the temperature of the vulcaniser cover upon which it is fixed. This is shown by the fact that a steam-gauge and a thermometer, mounted upon the same vulcaniser, cannot be made to agree in their indications unless all air is expelled from the vulcaniser.

A very important factor in doing good vulcanising, is an even temperature; any sudden variations are sure to be shown in the quality of the work. Spongy rubber is sometimes caused by a sudden fall in temperature and pressure. This is one of the principal reasons for the uniform excellence of the work done by the gas-regulator, as this device automatically keeps the temperature at the desired point when it has once been attained.

There is a good reason for not filling the vulcaniser too full of water, aside from any effect on the vulcanising process. If there is not sufficient steam room above the water, its expansion by heat will cause it to blow out the safety disc before the vulcanising point is reached; or, in an extreme case, if there is no relief, the vulcaniser may burst under the strain.

Water is not perceptibly elastic, and its expansion by heat in a chamber which it perfectly fills will give rise to a tremendous pressure, which, however, will be wholly relieved by a slight yielding of the walls of the chamber, or a small escape.

Filling vulcaniser brimful will result either in yielding or rupture of its walls.

The desire for quickening the vulcanising process has led to the use of too high a temperature ; hence the numerous complaints of brittle plates and spongy rubber.

Superior results can be attained with any good vulcaniser by a low heat, say 300 deg., the time being lengthened accordingly. The plate may be placed under water or in steam ; but to secure any certainty that the thermometer will indicate the true temperature of the interior of the vulcaniser, all air must be expelled from it by blowing off steam when it is first forming. Then the rubber will not be over-heated, and all the work will be evenly done.

THE INDEPENDENT PRACTITIONER.

VERRIER'S AND SCHILTSKY'S CONTINUOUS GUM METHODS.*

By Dr. A. Witzel.

Continuous gum-work is, the writer thinks, the most difficult, but more artistic that can be done in mechanical dentistry. The necessity of having specially prepared teeth for this work has, for many practitioners, been a great objection. Verrier's muffle furnace is, the writer thinks, the best for annealing. He uses ordinary plate teeth prepared for metal plates, in the following manner :

After the teeth are fastened with wax on their labial side to the well fitted and roughened platinum plate, he inserts the whole in equal parts of plaster and asbestos, so that only the labial side remains free. After removing the wax with boiling water, he replaces it with Dr. Allan's gum body, and fires it in the usual way. After the second baking, he removes the investment, and turns the rim with a burnisher and fills up any defects behind the teeth with gum body. He then generally puts a fresh investment of plaster and asbestos on the palatine side.

To get the right temperature for baking the gum enamel he uses Verrier's furnace with the right pressure of gas, working Fletcher's foot-bellows at the same rate, watching the time required to melt the gum enamel after the melting point of a piece of pure gold which is put in the muffle with the piece to be fired has been reached, gives equally good results in from ten to twelve minutes.

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*Read at the thirteenth Annual Meeting of the American Dental Society of Europe, Berlin, August, 1885.

After the investment is removed, to strengthen the continuous gum facing before vulcanising, a piece of 18 K. wire is soldered to the backs of the teeth. By the use of the much more fusible gum body and enamel made by Mr. O. Schiltsky, of Berlin, the writer has been able to make a few nice partial pieces with any kind of teeth.

SOUTHERN DENTAL JOURNAL.

TO PREVENT THE CUTTING EDGES OF TEETH FROM SINKING IN THE PLASTER WHEN CLOSING THE FLASKS.

By E. Parsons, D.D.S.

Dr. Parsons gives the following directions: Cut slips of sheet lead about three-eighth inch wide. Fill the top flask, lightly covering the cutting edges of the teeth; then scrape the plaster until the edges of teeth are all visible, press the strips of lead down on them and fill with plaster. Do this, and the teeth, when taken out, will be found in the same position as when first waxed up.

Literary Notices and Selections.

HYPEROSTOSIS OF ROOTS OF TEETH.

By Frank Abbott, M.D., New York, N.Y.

(*Continued from p.* 35.)

IV.—Union of Two Teeth through Hyperostosis.

Of this occurrence of the osseous union of teeth I have some eight fine specimens. The subdivision suggesting itself is as follows:

A. Union of the roots at their apices.
B. Union of the roots at their middle.

C. Complete union of the roots.

The first group is characterised by a union of devious roots of neighbouring teeth. As both of my specimens show a partial carious destruction of their crowns, the idea may suggest itself that, owing to the destruction of the intervening alveolar wall, and owing to gravitation, the roots became attached to each other through an inflammatory process. At the same time serious objections may be raised against such a view. The main objection is that an inflammation of the pericementum sufficiently intense to destroy the alveolus would be very liable to destroy the pericementum itself, to such a degree as to render the secondary new formation of cementum necessary for agglutination of the neighbouring roots quite impossible. Should we assume that the septum was originally absent, the only way of explaining such a formation is to assume that at least one of the germs of the coalesced teeth was malposed at the time of the embryonic arrangement. In this view, it will be observed, the alveolar septum did not form at all, and at the time of development of the roots the mutual pressure was sufficient to cause irritation leading to a new formation. I conclude, therefore, that the carious destruction of the crowns was merely a coincidence rather than a cause. The roots of one tooth are mere stumps left after carious destruction of the crown and a portion of the roots. Here, the hyperplastic cementum of the stumps is jagged and nodular, plainly indicating that the already formed outgrowth of cementum has been destroyed by cementitis in rather a secondary manner.

Group B shows a concretion of neighbouring roots of molars at the middle, upon one side, and at the apices upon the other. One of the crowns is slightly affected by caries,—by no means, however, to such a degree as to account for agglutinations of the two teeth, the enlarged cementum of which is mainly smooth. In a specimen in my possession representing two molars grown together nearly the entire length of their roots ; both teeth being otherwise sound. One of them shows at its neck an "enamel-drop," which feature I consider a further proof of embryonal malformation of such teeth. Some exostoses from the sockets are attached to the roots, which in my judgment proves merely a secondary hyperplastic pericementitis.

Group C is represented by but one specimen,—that of an upper cuspid united with a neighbouring lateral incisor. This seems to be a case which may be considered an exception to the rule,—viz., that only bicuspids and molars are thus affected. In this case the union is perfect the entire length of the roots, and only shallow furrows on the outside and inner surfaces, reaching nearly to a common apex, indicate the previous separation. The apex presents but one large common foramen. At the necks of both teeth there is a shallow carious destruction,—not, however, exposing the pulp-chambers. All these features furnish us proof of a fetal malformation.

For the purpose of examining this disease microscopically, I have ground quite a large number of specimens from teeth which at the time of extraction were immediately placed into dilute alcohol, in order to keep them constantly wet, and to preserve their soft parts. During the process of grinding they were also kept under water. All specimens showed in common a number of features which may be seen with a comparatively low power. Those which I wish to call attention to are as follows :

The dentine in some specimens, perhaps in several localities in the same specimen, was found in a normal condition ; and in others it exhibited the so-called interglobular spaces, greatly varying in size and number, indicative of an incomplete calcification.

In some specimens the dentinal canaliculi of the root were arranged in bundles, between which were found areas scantily provided with or altogether destitute of canaliculi. In these areas are often seen small interglobular spaces, sometimes in direct union with a few canaliculi.

The interzonal layer between dentine and cementum invariably exhibited formations known under the name of osteodentine, or globular dentine, either as the result of "eburnitis" or of incomplete calcification. It is a condition kindred to the interglobular spaces of Czermak. Such formations, as a rule, extend into the neck of a tooth,—where, however, they are more scanty than on the roots. A striking feature is their entire absence at the point of junction of the roots. Here the cementum is found in contact with an irregular formation of dentine (vaso-dentine), which will be described further on. Wedl seems to have been the first to illustrate this formation,—without, however, making an allusion to it in his text.

Next to the layer of osteo-dentine invariably a layer is found which, under lower powers of the microscope, looks coarsely granular, and which in consequence I propose to call the granular layer. It is destitute of cement-corpuscles, and as a rule is the only layer comprising the cementum of the neck of the tooth whenever this gradually slopes from the hyperplastic cementum to the enamel. Next follows the enlarged cementum itself, usually characterised by a large number of irregular lamellæ more or less concentric to the axis of the root. Some areas may be found destitute of lamellæ ; others very richly supplied with them. At the border of the cementum toward the crown, where the former is often found bulging to a considerable extent, the lamellæ are found parallel with the outer periphery of the cementum inosculating with the granular layer at obtuse angles.

In the lamellated basis-substance are found scattered cement-corpuscles. The most striking features of these corpuscles are as follows : First, they are far more irregularly distributed in the basis-substance than in normal cementum. In some portions of the hyperplastic cementum such corpuscles are comparatively few, whether the lamellæ be plainly marked or not ; in other portions they are arranged in groups or clusters without apparently any regularity. Second, the cement corpuscles, as a rule, are smallest near the granular layer, and largest toward the periphery ; at the latter portion their offshoots are much wider and more irregular, often piercing the lamellæ rectangularly. No constant relation between lamellæ and cement-corpuscles is to be found. Third, occasionally the cement-corpuscles are to be seen in large numbers clustered together in longitudinal groups. This is probably caused by the previous presence of medullary canals, the tissue of which, at a comparatively late period, has given rise to a large number of cement-corpuscles, and a comparatively small amount of basis-substance between them.

The hyperplastic cementum is often traversed by medullary canals carrying central blood-vessels. These are most numerous at or near the point of junction of the roots, where, as first described by Tomes, even normal cementum may sometimes contain medullary canals. The vessels of these medullary canals, also first described by Tomes, with whom I am pleased to agree, are in direct connection, and anastomose with the blood-vessels of the pericementum. In one of my specimens the cementum of the neck exhibits peculiar features. Instead of the coarsely-granular layer usually present, and previously alluded to, there is a zone traversed at nearly right angles by bundles of canaliculi, very broad and in no connection whatever with cement-corpuscles. Above this zone follows the ordinary granular zone, bordered towards the dentine by a thin layer of globular dentine ; then follows the finely-granular layer of the dentine itself, with very few or no canaliculi, and at last we come to the canaliculated dentine of normal development.

High amplifications plainly reveal the structure of the interzonal layer between dentine and hyperplastic cementum. The dentine often shows interglobular spaces, which as a rule are filled with granular protoplasm, and serve as the termination of some dentinal canaliculi ; especially for their tenants, their fibres of living-matter. The interglobular spaces nearest to the cementum sometimes directly inosculate with the interstices between the globular masses of calcified basis-substance, constituting the tissue termed osteo-dentine or globular dentine. The globules themselves vary greatly in size. They usually, however, correspond with the bulk of one or a limited number of medullary corpuscles present before their transformation into basis-substance. The interstices between the globules also vary in size, and send offshoots into the larger globules, subdividing them into incomplete smaller ones. All of them contain granular protoplasm. In the granular zone, following the layer of osteo-dentine, we sometimes meet with very large and irregular interglobular spaces, apparently in no direct connection with the offshoots of cement-corpuscles. In several specimens I have seen arising from the cement-corpuscles very long and slightly wavy offshoots, which, owing to their parallel course, bear a close resemblance to dentinal canaliculi. Formations of this kind occur only in those layers of hyperplastic cementum nearest the dentine, and always lose themselves in the granular layer above the osteo-dentine without directly communicating with the dentinal canaliculi proper. The medullary canals traversing the enlarged cementum either contain medullary corpuscles and capillary blood-vessels, or they are filled with highly-refracting granules and globules of lime-salts, as described by Wedl. Should their canals become obliterated, they give rise to groups of cement-corpuscles between a scantily calcified basis-substance.

(To be concluded.)

ANÆSTHESIA *versus* ASPHYXIA.

By Dr. S. J. Hayes, Pittsburgh, Pa.

(*Continued from page* 44.)

Many other eminent authorities might be quoted to the effect that nitrous oxide is as much of an asphyxiating agent as are the inert gases, nitrogen and hydrogen, and that it will produce asphyxia and death in about the same time, but we will conclude with the following "experiments with nitrous oxide and carbonic acid," as reported in the *Odontographic Journal*, Vol. 2, No. 4, January, 1882: "At a union meeting of two of the District Societies of Western New York, held at Buffalo, the latter part of October last, Dr. W. C. Barrett, assisted by Dr. A. P. Southwick, performed a number of experiments on small animals, using for that purpose nitrous oxide and carbonic acid. The apparatus consisted of a cylinder, a larger one of carbonic acid, and a covered glass receiver, twelve to fifteen inches in depth. Near the edge of the cover was a small opening through which, by means of rubber tubing, the gases were conveyed to the confined animals, and through which also their exhalations were permitted to escape into the room. The method followed in each experiment, was to place the animal in the receiver, adjust the cover, pass the tubing through the opening above mentioned, and then turn on the gas, the time being taken at the moment of admission of the gas, and again when life was pronounced extinct.

"The following table gives the kind of animal experimented on, the gas used, the result of the experiment, and the time consumed:—

1.	Pigeon,	(common)	carbonic acid, ...	death,	1 min. 20 sec.
2.	,,	,,	nitrous oxide, ...	,,	1 ,, 20 ,,
3.	,,	(tumbler)	carbonic acid, ...	,,	1 ,, 10 to 25*
4.	,,	,,	nitrous oxide, ...	,,	1 ,, 30 ,,
5.	Rabbit,		carbonie acid,†... ..	,,	1 ,, 25 ,,
6.	,,	,,	nitrous oxide, ...	,,	1 ,, 40 ,,
7.	Mouse,		carbonic acid, ...	,,	1 ,, 10 ,,

"Artificial respiration was resorted to in all cases except '7,' but without effect except in '5.'"

Thus having proven both from the very *best* of authority and the logic of facts, in demonstration of the laws of chemical affinity, that oxygen,—the life-giving principle,—chemically united with any other elemental substance, cannot support life, that when taken in its pure state, it is too active and stimulating for respiration and that, when simply mixed with nitrogen as in the atmosphere, it will support respiration and life, we have *unequivocally established* the fundamental or *bedrock* principle, that there can be no anæsthetic without a proper admixture of atmospheric air with a suitable narcotic.

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*Disagreement on the part of time-keepers.

†Pronounced dead in the time given, but subsequently restored to normal condition by means of artificial respiration.

The definition sometimes given, that "anæsthesia is the absence of sensation," is not sufficiently explicit ; not yet is it true. For in death there is an absence of sensation, and one who is dead cannot be said to be anæsthetised, for there is an absence of life as well as of sensation.

Again, there is also, in that state or condition called syncope, an absence of sensation, but there is also an absence of the forces and functions of life brought about by an interruption of circulation. Nor yet can this condition be in any sense called anæsthesia, any more than asphyxia or death can be thus named. As we have already demonstrated, insensibility and unconsciousness are the result of asphyxia as well as of anæsthesia. But that peculiar condition of the system, so much desired for surgical operations, is an absence of pain with the continuation of the forces and functions of life, and that we properly name anæsthesia. Hence, no scientist should be so stupid as to confound anæsthesia with asphyxia, or as to make little or no distinction between them.

Anæsthesia is a perfectly safe condition for surgery. But asphyxia, syncope or coma are *positively dangerous* to life. In fact, that which is breathed in lieu of the atmosphere, that produces asphyxia, antagonises life from the first inspiration ; while asphyxia itself is a very near approach to death, just so near that when the patient has continued in that condition long enough that the affinity of the blood for oxygen has so weakened that it fails to take up the oxygen from the atmosphere, the patient is irrevocably gone.

While it is true that narcotics may be administered in such a manner and in such large percentage as to induce a suspension of the vital forces, and thus produce asphyxia or syncope, yet it is more than equally true that none of these dangerous results follow when a proper admixture of pure air with a suitable narcotic,—diluted and attenuated in such a manner and in such a percentage as to meet the wants and condition of every patient in the various stages of anæsthesia,—is administered by a competent person with suitable apparatus.—*American Journal of Dental Science.*

Reports of Societies.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE First Ordinary Meeting of the above Society, Session 1886-7, was held in the Rooms, 30, Chambers Street, Edinburgh, on Thursday, November 11, 1886.

The President (Mr. W. Bowman Macleod) on taking the chair, gave a few words of welcome, and congratulated the Society on re-assembling, after a pleasant and health-giving holiday, without any breach in their membership. Thanks to the exertions of their Secretary, and to the interest taken in the progress of the Society by the members themselves, they had the prospect of a very busy session. Papers and communications had already been secured sufficient to fill up the dates till March meeting, and to-night they were honoured by the reading of a paper by Dr. Symington, which would present for their consideration some original views regarding the relation of the permanent to the deciduous teeth, illustrated by the presentation of frozen sections, as well as diagrams of these sections. In view of this paper, it had been thought advisable that the other business of the meeting should be held over, and he would, therefore, at once call upon Dr. Symington to read his paper (see page 51).

After the reading of the paper, the President thanked Dr. Symington for his paper, which had been listened to with an unusual amount of interest. They could not fail to be struck by the admirable manner in which the sections they had been examining exhibited the relative positions of the different tissues. By this method, all dangers of displacement of the parts were avoided, a condition of things impossible, as far as perfect accuracy was concerned, when attempted in the ordinary manner on the dissecting-room table. In accordance with the usual custom, the discussion would be postponed until the paper had been circulated among the members in the Society's Transactions.

The Second Ordinary Meeting of the Session 1886-7 was held on the 9th of December, Mr. W. Bowman Macleod (President) in the chair.

At the conclusion of the formal business, Mr. Patrick S. Walker, Dundee, was balloted for, and admitted as a member of the Society.

Casual Communications.

The Secretary (Mr. Amoore) exhibited two models of a boy's mouth, taken at the respective ages of seven and nine; the one showed a supernumerary temporary incisor, and the other where it had been succeeded by a permanent supernumerary one. Such cases might not be uncommon, but it was not always feasible to have models of the two conditions side by side for comparison.

Mr. Macleod brought forward a flask for vulcanite work, sent for exhibition by Mr. W. Whitehouse (London), which was designed for the purpose of preventing what was known as the "raising of the bite" in the construction of artificial teeth. The flask was in three pieces, the central one overlapping the cutting edges of the teeth, thus forming a shield which would prevent the plaster breaking, or rising when subjected to pressure in closing the flask.

Mr. Wilson exhibited a very large and well-prepared skull of a Capybara, as also specimens of its third upper molars, drawing attention to their unique construction, and to the very porous nature and limited extent of the cementum connecting the denticles.

Mr. Watson exhibited, beneath the microscope, a preparation showing some of the micro-organisms present in the matter found round the necks of teeth in pyorrhœa alveolaris.

Mr. Wilson exhibited the skull of an adult African Wart-hog (Phacochœrus), the third molars of which showed the cylindrical nature of the cusps very well.

Mr. Mackintosh exhibited models taken from the mouth of a girl aged 16. They were peculiar in representing only seven teeth in each jaw, and were also remarkable for the minute size of the bicuspid teeth.

The President announced that the next meeting would take place on the evening of January 13, 1887.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, December 6th, 1886,
T. Charters White, M.R.C.S. & L.D.S. Eng., *President,*
in the Chair.

The Minutes of the previous meeting having been read and confirmed, Mr. T. A. Rogers rose and said :—“ Mr. President, before the business of the evening begins, I would beg permission to thank the Society for the great honour they have conferred upon me by admitting my portrait to a place in our room. When, a few months since, I acted as spokesman on behalf of the friends of our good Treasurer, I little thought that my own turn was so soon to come ; I should almost as soon have expected to be summoned to Windsor and made a Duke on the spot. And truly, if any such choice could have been offered to me, I should certainly have preferred the portrait to the peerage. On reading Mr. Parkinson’s kind words when he made the presentation, I could not help fearing that on this occasion he had allowed his friendship to run away with his usually calm and clear judgment. And at the same time I was struck with an amiable peculiarity of our profession in its treatment of those who have been so fortunate as to win its confidence. Not only does it confer on them all the honourable posts in its gift, but it continues to honour them still further for having accepted these distinctions.

“ I beg very sincerely to thank those friends, whose names I presume I may not seek to know, who were so kind as to have the portrait painted, and to thank the Society through you, Sir, for allowing it a place among the portraits of those who have worked for the advancement of our profession, all of whom it has been my privilege to know, and with most of whom I have been intimately connected by the ties of kinship or of the closest friendship.”

The President said Mr. Rogers had spoken very modestly of his claims to their regard, but he thought the members would agree with him (Mr. White) in thinking that Mr. Rogers thoroughly deserved the compliment which had been paid him, and that, in fact, they could not have done less for one who had done so much for the profession, and who, by his urbanity and kindness, had endeared himself to all, from the oldest to the youngest. He had no need to say more, for the applause with which Mr. Rogers had been greeted, sufficiently expressed their appreciation of him.

A letter from Mr. G. A. Ibbetson was then read by the Secretary, in which he returned his warmest thanks for the honour which the Society had conferred upon him in electing him an Honorary Member. As one of its founders, he regarded with justifiable pride the high position which the Society had attained, and the signs of its continued progress. He felt assured that it was destined to rank with any of the scientific Societies of the metropolis, and that its honorary membership would be highly valued and eagerly sought after.

The President announced that the following gentlemen had been duly nominated as candidates for membership, and would be balloted for at a subsequent meeting, viz.:—

Messrs. Henry Davis, M.R.C.S., 157, Gower Street, W.C.
Daniel Browning, L.D.S. Eng, 27, Upper Montague Street, W.
Frank H. Briggs, L.D.S. Edin., 5, Park Crescent, Torquay.
William Edward James, L.D.S.I., Kingston-on-Thames.

The following nominations are now under the consideration of the Council :—

Frederick Arthur Canton, L.D.S.Eng., 34, Baker Street, Portman Square, W.
William Cass Grayston, L.D.S.I., 11, Valley Bridge Parade, Scarborough.
Oswald Fergus, L.D.S. Glasg., D.D.S. Univ. Pennsylvania, 41, Elm Bank Street, Glasgow.
Walter Glaisby, L.D.S.I., 4, St. Leonards, York.

Messrs. Walter Coffin and Newland Pedley were selected in the manner prescribed by the Bye-laws to audit the accounts of the Society for the past year.

The Casual Communications were then called for and read. *See p.* 70.

Dental News.

ODONTO-CHIRURGICAL SOCIETY.

7, Abercromby Place,
Edinburgh,

The Third Ordinary Meeting of the Odonto-Chirurgical Society (Session 1886-87) was held in the Rooms, 30, Chambers Street, Edinburgh, on Thursday, 12th January, at 8 p.m., W. Bowman Macleod, L.D.S., President, in the Chair.

Private Business.—Nominations.

General Business.—A paper, entitled "A Few Notes on Alveolar Hæmorrhage," by James M. Nicol, L.D.S., Ed. was read.

Casual Communications followed the reading of this paper.

JOHN S. AMOORE,
Hon. Sec.

HOSPITAL REPORTS.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Dec. 1 to 31, 1886 :—

Number of Patients attended		1932
Extractions	Children under 14	297
	Adults	752
	Under Nitrous Oxide	478
Gold Stoppings		251
Other Stoppings		799
Advice		100
Irregularities of the Teeth		118
Miscellaneous and Dressings		393
Total		3188

CHAS. F. RILOT, L.D.S.,
House Surgeon.

Monthly Statement of operations performed at the National Dental Hospital, from Dec. 1 to Dec. 31, 1886 :—

Number of Patients attended		1664
Extractions	Children under 14	262
	Adults	510
	Under Nitrous Oxide	479
Gold Stoppings		86
Other Stoppings		527
Advice and Scaling		226
Irregularities of the Teeth		242
Miscellaneous		177
Total		2509

ISIDORE FRED. PRAGER,
House Surgeon.

Annual Statement of operations performed at the National Dental Hospital, from Jan. 1 to Dec. 31, 1886:—

Number of Patients attended		22122
Extractions	Children under 14	4910
	Adults	7616
	Under Nitrous Oxide	6291
Gold Stoppings		860
Other Stoppings		7195
Advice and Scaling		3380
Irregularities of the Teeth		2588
Miscellaneous		1881
Total		34721

Isidore Fred. Prager,
House Surgeon.

Work done at the Victoria Dental Hospital of Manchester, during the month of December, 1886:—

Number of Patients attended		666
Extractions	Children under 14 Adults	442
	Under Nitrous Oxide	62
Cocaine		3
Gold Stoppings		20
Other Stoppings		71
Miscellaneous		229
Total		827

Henry L. Knoop,
Hon. Secretary.

Report of Cases treated at the Home and Infirmary for Sick Children, and South London Dispensary for Women, Lower Sydenham.

Dental Cases for 1886.

Extractions	112
Ditto, with Gas	14
Stoppings	8
Various	22
Total	156

Charles A. Clark, L.D.S.,
Hon. Dental Surgeon to the Institution

British Journal of Dental Science.

No. 457. LONDON, FEB. 1, 1887. Vol. XXX.

DENTISTRY IN RELATION TO THE STATE.

By George Cunningham, B.A. Cantab., D.M.D. Harvard,
Lecturer on Dental Surgery, University of Cambridge.

(Concluded from page 65.)

Sanitary Regulations.

Section II.—*Personal Hygiene* of Troops.

Paragraph 1044.—"Medical officers doing duty with troops will inspect the men under their charge weekly, for the detection of itch, cutaneous complaints, ocular diseases, ulcers and any ailments indicated by the countenance or skin, as fever, scurvy, small-pox, &c., and will immediately adopt such precautionary measures as may appear to be requisite."

Paragraph 1046.—"The medical officer will satisfy himself that the personal cleanliness of the men is properly attended to."

Note.—Might not this personal cleanliness required of the men be extended to the mouth and teeth? A reference to the table showing the state of the mouths of recruits will show the necessity of this.

Medical Attendance and Examination.

Employment of Medical Practitioners.

Paragraph 961 provides that if there be no medical officer at a station where there are non-commissioned officers and soldiers entitled to medical attendance and medicine at the public expense, the officer commanding at the station under provisions of Articles 326 to 330 of the Royal Warrant relating to pay, &c. (Army Regulations, Vol. 1), engage the services of a properly qualified private medical practitioner for attendance on the non-commissioned officers and soldiers present.

NOTE.—Remedial dental treatment from the equipment supplied seems to be included in the medical attendance provided by the Department. Might not this be taken as a precedent for engaging the services of a properly qualified private dental practitioner?

UNITED STATES ARMY EXTRACTING CASE.

No 1, upper front root.
„ 2, lower bicuspid and canine.
„ 3, „ „ „ incisor.
„ 4, „ molar either side.
„ 5, „ „ cowhorn.
„ 6, right and left upper molar.
„ 7, upper bicuspid and canine.
„ 8, upper and lower back root.
„ 9, „ incisor and canine.
„10, „ wisdom, either side.
5 elevators for lifting roots of bicuspids and molars.
1 gum lancet.

NOTE.—The absence of forceps for the teeth of children and the absence of the tooth key is worthy of remark.

UNITED STATES ARMY CASE FOR TEMPORARY FILLINGS.

No. 1, mouth mirror for examining teeth.
6 files (assorted), for separating teeth and dressing rough edges.
6 socket handles for holding instruments.
1 exploring instrument for examining cavities.
2 chisels for trimming edges of large cavities.
10 excavators, for cutting out decayed substance.
1 scaler for removing deposits of tartar.
1 spatula, for packing gutta-percha fillings in large cavities.
3 burnishers for packing gutta-percha fillings in small cavities.
1 Arkansas stone, for sharpening instruments.
1 pair college pliers, for handling absorbents, &c.
1 oz. premium gutta-percha for filling cavities.
6 sheets bibulous paper for drying cavities.

NOTE.—Contrast this provision with Appendix No. 24 of the H.M. Army Medical Department regulations (p. 31). Observe the presence of the mouth mirror, the probe and the dressing forceps.

UNITED STATES NAVAL ACADEMY DENTAL EQUIPMENT.

Equipment.—A Dental Surgery with all the instruments and appliances used by American dentists in care of a qualified dental surgeon, appointed by the Superintendent of the Academy, and approved by the Secretary of the Navy, at a salary of 1,600 dollars (about £333) per annum. Hours of attendance, from October 1st to June 10th, daily from eight a.m to noon.

Operations performed—general dental operation, except artificial work. Estimates of materials used—gold foil, 8 oz. cost about 200 dollars (£50); amalgam, cements, rubber, dam, &c., cost about 10 (£2). Number of cadets in the academy about 250.

REFORMED CASE OF SCALING AND TEMPORARY TOOTH STOPPING INSTRUMENTS.

Mouth mirror	1
Probe	1
Dressing forceps	1
Excavators	6
Chisels	2
Rosehead drills	4
Stoppers and burnishers	4
Scalers	3
Absorbents and bibulous papers	1 packet
Amalgam	¼ oz.
Mercury in holder	1
Premium gutta percha	½
Folding case	1

NOTE.—This equipment could be provided at the same cost (38s.) as the present army case, with which contrast this equipment.

REFORMED AND EXTENDED CASE OF SCALING AND TOOTH STOPPING INSTRUMENTS.

Mouth mirror	1
Probes	2
Dressing forceps	1
Excavators	12
Chisels	4
Rosehead drills	6
Stoppers and burnishers	6

Spatula	1
Nerve instruments	10
"Sullivan" ladle	1
Files (assorted)	6
Arkansas slip	1
Glass slab	1
Mercury in holder	1
Amalgam	1 oz.
,, copper	1 oz.
Phosphate cement	1 packet
Premium gutta percha	1 oz.

Case to be supplied at each station hospital at home and abroad.

Combined Case of Scaling, Tooth Stopping and Extracting Instruments.

Tooth stopping instruments and materials as in reformed extended case, and forceps in a portable case.

As the mahogany case of the army equipment is necessarily expensive, this combined equipment could be provided for about the same cost as presently paid for the two army equipments. (App. 24 and 26, Army Medical Regulations).

Return of Recruits showing the number Inspected from 1st January, 1879, to 31st December, 1885, and Rejected, in Recruiting Station where the Dental Examination was made.

YEAR	INSPECTED.	REJECTED	FIT.	REJECTED FOR LOSS OR DECAY OF TEETH
1875	5030	1272	3758	28
1876	6376	1451	4925	37
1877	6464	1809	4655	35
1878	6209	1735	4474	33
1879	6738	2113	4625	37
1880	6281	3148	3133	27
1881	4635	2311	2324	20
1882	432	1808	2624	22
1883	7529	3253	4276	137
1884	6696	3003	3693	75
1885	6149	2922	3227	29
	66,539	24,825		

Average ... 100 ... 37·30

Appendix N.

TABLE SHOWING THE RESULTS OF AN EXAMINATION OF THE MOUTHS AND TEETH OF ARMY RECRUITS OF WHICH ABOUT 60 PER CENT. WERE PASSED AS FIT.

No. Examined.	Average.		State of the Teeth.			Degrees of Tartar Deposits.			Condition of the Gums.			Dlseased Teeth.				Lost.		Irregularities.		
	Years.	Months.	Clean.	Dirty.	Foul.	Little.	Much.	Very much.	Healthy.	Inflamed.	Ulcerated	Decayed.	Badly Decayed.	Abscessed.	Teeth requiring Extraction.	Teeth already lost.	Total to be lost.	Treatment by Extraction.	By Apparatus.	Impracticable.
Boys 3	14	11	0	2	1	1	1	1	2	0	1	5	3	0	7	2	9	1	1	0
Recruits (17 to 25 years) 100	19	7	9	38	53	14	34	30	30	28	42	348	34	27	231	105	336	13	1	7
				91			64			70		409						21		

ABSTRACTS FROM QUAIN'S DICTIONARY OF MEDICINE.

"Morbid conditions of the mouth, whether as inflammation of the mouth or tongue, or as disorders of the teeth, render the first function of the digestive apparatus, viz., mastication, difficult and imperfect. Imperfectly masticated food, when swallowed, is a well recognised cause of dyspepsia and its many inconveniences."—(Dr. Allchin).

"It must be remembered that the occurrence of one condition is apt to be quickly associated with another, and hence the forms of dyspepsia as they usually present themselves are of a complex nature, however simple the primary fault may have been."—(Dr. Allchin.)

"The diseases of the teeth are for the most part of a surgical character, and need operative interference. The pathological conditions of the teeth are, however, of important interest to the medical practitioner, *causing* and explaining, as they do, many maladies especially of the nervous system, and having a serious bearing on digestion and nutrition as dependent on efficient mastication."—(Mr. Salter).

NOTES FROM A PAPER OF DR. MAGITOT, OF PARIS, ON "THE CURABILITY OF DENTAL CARIES."

"To-day the conservative tendencies of modern surgery must protest against any method of practice which has as its object the rational therapeutic treatment and the physiological restoration of the teeth, relegating the ancient operation of extracting for the cases, relatively very rare, of extreme complications and by way of exception."

"The enquiry has been made publicly in an open clinic. It has thus had for witnesses, and also as fellow workers, a certain number of young doctors who, for some years, have been willing to assist in my practice and attend my lectures."

Putting aside the extractions for "irregularities, anomalies, accidents of the wisdom teeth, &c., in a total of 2,000 teeth, the cures amount to 1,980, while the extractions numbered 20, or 99 per cent. cures, and 1 per cent. extractions."

"The age of the subjects observed, from birth to seventy years, show that the period of the greatest frequency of the cases undertaken is that of twenty to thirty years, next comes that from thirty to fifty years, then that from twelve to twenty years, &c."

CASUAL COMMUNICATIONS,

Contributed to the Odontological Society of Great Britain.

(*Concluded from page* 77.)

Dr. George Cunningham exhibited the model of a most ingeniously constructed appliance, which had been devised by M. Rosenthal, of Liège, for a patient who had lost a considerable portion of the lower jaw.

The operation, which was performed by Professor von Winivarther, of Liège, was necessitated by a sarcomatous tumour, the parts removed consisting of the body of the lower jaw posterior to the second bicuspid, together with the ascending ramus and condyle. As the result of unopposed muscular action, the other condyle became dislocated, and the patient was quite unable to make any use of the part of the jaw which was left.

Two months after the operation, M. Rosenthal's assistance was sought; models were taken and an apparatus made with the view of restoring the parts to their proper position. As it was found impossible to reduce the dislocation without the aid of an anæsthetic, chloroform was administered by Professor von Winivarther, and Dr. Traipont, the house surgeon, holding the jaw in place, the apparatus was inserted in the mouth and secured.

The apparatus consisted of two parts. A lower plate, or rather double collar, encircling the two lower bicuspids, firmly fixed in position by a screw bearing on the mesio-labial aspect of the first bicuspid. To the extremity of this plate was soldered a long tube, for the reception of a strong pin attached to the centre of a small partial gold upper plate, furnished with two clasps, the anterior embracing the upper second bicuspid, the posterior encircling the remaining upper molar. The upper plate was attached to the teeth by two screws. The length of the pin was such that it could not slip out of the retaining tube, even when the mouth was opened to the greatest extent. By this means the patient obtained a simple up and down or hinge-like movement, but of course any lateral or backward and forward motion was impossible.

In order to test the appliance, M. Rosenthal made the patient eat before she left the couch, and she said she could do so without any inconvenience whatever.

Some months afterwards, he wrote to her asking how the apparatus was answering its purpose; she replied that it answered well, and that she was able to eat without difficulty.

The evils to be feared were, first, the possibility of injury to the teeth from friction of the clasps ; this was guarded against by securing it firmly by means of screws. Secondly, injury to the teeth from food collecting about the appliance. This was inevitable, since the appliance could not be taken out for cleaning and replaced, owing to the tendency to dislocation of the jaw. But M. Rosenthal believed that with a person of cleanly habits, as this patient was, a fixed apparatus made in gold would last ten or twelve years without damaging the teeth supporting it.

M. Rosenthal's latest report was that he had seen the patient who was enjoying excellent health. The gums were pink and healthy ; the teeth maintained the apparatus securely, and were as firm as the others. The apparatus had been in use nine months. From the time of the operation until the appliance was fitted the patient could take nothing but liquids ; with it she could eat solid food without difficulty, so there could be no doubt about its success ; but Dr. Cunningham thought that it would have been wiser to have distributed the strain over more than two teeth in each jaw, and he had also suggested that it would tend to the preservation of the teeth if they were completely encapsuled by the plates, which might be secured with pyrophosphate cement.

Mr. Storer Bennett said that some five or six years ago he was consulted by Mr. Lawson with reference to a patient on whom he had performed Esmarch's operation for the relief of closure of the jaws. She had suffered from this for a long time ; it was said to be the result of cancrum oris, but the history of the case was not quite clear. The jaws had been twice opened by means of wedges, &c., but closed again as soon as treatment was discontinued. Then some necrosis took place, with offensive discharge into the mouth, and finally Mr. Lawson removed a wedge-shaped piece from the front of the jaw. The object now was to keep the halves of the jaw apart, so as to maintain proper articulation with the upper teeth, and yet to allow a certain amount of independent movement. For this purpose Mr. Bennett made a small gold plate with bands grasping the left first lower bicuspid with a gold tube attached by means of a hinge joint. A similar plate was fitted to the right lower canine with a pin hinged to it which worked in the tube. He had the patient under observation for about three years, and during that time the apparatus worked very satisfactorily, but for some time past he had lost sight of her.

In answer to a suggestion from the President, Mr. Bennett promised to show the apparatus at the next meeting, and to show the patient also if he could trace her.

Mr. Henri Weiss said he had been consulted with regard to a patient who had had a portion of the lower jaw removed on account of malignant disease, with the result that the lower teeth were displaced laterally about three-quarters of an inch. As the man was in bad health, and it was thought desirable to disturb the parts as little as possible, he simply fitted an upper case with a vulcanite block against which the lower teeth bit, and this answered its purpose sufficiently well. A recurrence of the disease took place soon afterwards and eventually proved fatal.

Mr. E. Lloyd Williams wished to point out that the model of the apparatus now shown by Dr. Cunningham did not reproduce the natural articulation, and must therefore be necessarily faulty. Dr. Cunningham's plaster models were articulated by a broad iron hinge placed at the back giving the apparatus a motion which it could not possibly have in the mouth. The artificial joint shown was mechanically incorrect, and unless the rod attached to the upper plate was extremely loose in its socket, no movement whatever could take place. He suggested that the base-plates should be considerably enlarged, so as to give an increased area over which to distribute the pressure ; to these should be attached two rods, one to the upper and one to the lower plate, secured by a simple pin joint, a similar joint bringing the free ends together. In this way a good joint would be obtained, mechanically correct and likely to prove useful.

Dr. Cunningham, in reply, admitted that neither his diagram nor his model were in all respects strictly accurate, and with regard to the apparatus itself he thought it would have been better to distribute the strain, which must be considerable, over a larger area. It had, however, proved itself a practical success, and its great merit, in his opinion, was its simplicity.

Mr. R. H. Woodhouse showed for Mr. Reboul a model of the upper jaw of a child aged five years and nine months, with a supernumerary lateral incisor. It had been sent for the Museum.

The President said he much regretted that Mr. Wm. Cunnington, who was to have exhibited some very interesting prehistoric jawbones that evening, was unable to be present owing to indisposition; but he had very kindly sent the specimens, some twenty in number, together with a letter giving an account of the circumstances under which they were found, and he (the President) would supplement this with a few remarks on mound burials in general, as well as on the particular specimens submitted for examination.

The custom of erecting mounds or "barrows" over the resting place of the dead might be considered a practice of almost universal adoption, having been met with in almost all parts of the world. The term "barrow" came from the Anglo-Saxon word *beorh*, signifying in this case "a grave mound." They were of two kinds, cairns or mounds of stone, and barrows or mounds of earth. These latter varied in size from a few feet to that of a miniature mountain. They differed in shape also as well as in size, some being round, while others were oval or pyriform. The long form, of which that from which these specimens were taken was an example, was considered by archæologists to be the older of the two, and probably confined to the neolithic age, before any metal was in general use in ancient Britain. This opinion was based upon the fact that no weapons or implements of metal of any kind have ever been found in these "long" barrows, though weapons of bone and stone, and especially leaf-shaped arrow-heads of flint, are occasionally met with. The pottery, also, used by these people was of the rudest kind, and quite devoid of ornament. It was probable, therefore, that these mounds contain the relics of the earliest inhabitants of Britain of whom any sepulchral monuments exist.

I seemed to have been a common practice in those ages when a chief died to slaughter wives, children, and dependents; hence a number of skeletons were found interred beneath these mounds. Burning the bodies did not appear to have been introduced till the "bronze" age, the period immediately following the stone age, and so the skeletons of this barrow were in a tolerably fair condition of preservation, due perhaps as much to the greater density of the bone, as to the dry entombment to which they had been subjected beneath heaped-up chalk and dry turf or humus.

The body of the individual in whose honour the barrow was raised was always found at the deepest part of the mound, whilst the humbler portion of the community were buried at no great depth beneath the surface. From this it might be concluded that these tumuli were erected over the remains of chiefs of clans, or persons in some considerable authority; this fact being emphasised by one barrow containing but the body of a child, presumably the future head of the clan.

Often with these human bones were found those of animals, and it had been supposed that these were the remains of funeral feasts partaken of by the survivors over the interment, and buried with the bodies of the slain. There appeared to be some evidence, also, that these early inhabitants, if not anthropophagi, were given to eat their animal food in an uncooked condition.

When these places of sepulture were very carefully examined, the body which formed the principal interment would be found placed upon the side with the knees drawn up, in the position in which many people go to sleep. So constantly was this the case that out of 301 burials of unburnt bodies, only four instances occurred in which the body was laid out at full length.

There was one very striking fact in connection with the two kinds of barrows usually met with, and that was that whilst the round barrows were found to contain both brachycephalic and dolicho-cephalic skulls, the crania found in the long barrows were invariably dolicho-cephalic or hyperdolicho-cephalic. The skull exhibited that evening was a very good example of the latter type.

But it was particularly with the jaws they had to do that evening; and, in introducing that subject, he would point to one or two facts noted by previous observers. Mr. Mummery found sixty-eight skulls of the long barrow period in Wiltshire, and amongst them only two cases of dental caries, whilst in thirty-two skulls of the round barrow period he found seven cases of caries. Of sixty dolicho-cephalic skulls from Yorkshire tumuli no less than twenty-four exhibited the disease. Professor Rolleston, in his examination of an entire series of bones, fragmentary as well as perfect, found the amount of caries much the same as Mr. Mummery did in the Wiltshire burials of the same period. Ten lower jaws, nine of which were from persons beyond the age of puberty, were recovered from a long chambered barrow, and Professor Rolleston says: "In none of these lower jaws had any teeth been lost before death; in only one is there any caries visible; and in one other, an old woman, there is a cavity formed by an alveolar abscess in connection with a first lower molar worn down to the fangs, with its pulp cavity obliterated by secondary dentine." It was a curious fact in connection with this last case that the women of the stone age seemed to have been strongly predisposed to alveolar abscess, being found more frequently the subjects of it than the men. This had been attributed by anthropologists to their having lived under more anti-hygienic conditions, being more confined to their unhealthy huts than the men, who are supposed to have been out hunting for food, or fighting their enemies. Amongst the maxillæ on the table there was one showing signs of the existence of an alveolar abscess.

There was also a portion of the lower jaw of a child, probably five years of age, in the collection, with the right lower canine and first and second molars unerupted and *in situ.* This tended to strengthen the supposition of a sacrificial slaughter having preceded the formation of this tumulus, as a child of this tender age would hardly be found fighting with warriors, and slain in battle. The skulls found with these jaws had, with few exceptions, been cleft through or near to the sagittal suture with a tolerably clean cut while the bone was yet soft, as during life, the inner table of the cranium being splayed out by force of the blow. A portion of a left upper maxilla was cleft in a similar manner, the incision going longitudinally through the lateral incisor. This cut was manifestly given either during life or immediately after death, while the bone was moist, for the edges of the cut were as clean as if done with a knife.

He would call their attention to the condition of the molar teeth in these jaws, to the extraordinary way in which their grinding surfaces had been worn. This had always been stated to be due to the rough method of grinding the corn* between two gritty stones practised in those primeval ages, and he presented some evidence in confirmation of this under the microscopes on the table. It had occurred to him that, as particles of food became imprisoned in the tartar, sealed up in an insoluble concrete of lime, and could be made to reveal themselves upon the solution of this material, it would be an interesting revelation if the tartar found on these teeth of the stone age could be made to give up its secrets in a similar manner. He accordingly carefully decalcified some small portions, and examined the sediment. The result of this examination he had embodied in the list before them. The sediment consisted of pale drab-coloured pulpy amorphous masses, apparently composed for the most part of altered and disintegrated epithelial scales, mixed with the contents of starch cells. Throughout these masses were scattered grains of sand in great abundance; polarised light discriminated between these grains, and showed them to be of two kinds, some being composed of silex, and the others of quartz or granite. Mr. Cunnington informed him that he had found in a Wiltshire tumulus a quern, as it was termed, in which the corn was ground, probably by the aid of a round hard flint. This quern was of greensand, very soft and friable; and if the querns generally were of this nature it would fully account for the abundance of these sandy particles in the tartar, and also for the way in which the masticating surface of the molars had been eroded. In addition to the above, and more sparsely scattered through the sediment, he was enabled to identify the barblets of feathers, husks of starch corpuscles, portions of altered husk of corn, and of wool; a spiral vessel from vegetable tissue, a diatom or polycystine—he could not say which, but he had had suspicions of polycystine fragments from other portions of the sediment; some oval, violet-coloured bodies; the point of a fish's tooth. There were also two organisms which he had failed to recognise, and should be glad if any of those present could enable him to do so.

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* See Trans., Vol. XVI, N.S., p. 213.

As the interesting collection deserved a careful examination, he would not detain them longer, but would just read the following description by Mr. Wm. Cunnington of the circumstances under which the specimens were obtained:—

"The ancient human teeth which I have the pleasure of exhibiting this evening to the members of the Odontological Society, were obtained by me in June last from a 'long' barrow called 'Bowlsbury,' or 'Bowl's barrow,' near Heytesbury, in South Wilts. It is well known to antiquaries, having been opened by Mr. Cunnington, F.S.A., in 1801, and described in Hoar's 'Ancient Wilts' (I. 87), and again by the late Dr. Thurnam in 1864. It is 150 feet in length, by about 50 feet in breadth, and nearly 11 feet high. It is bounded on the sides by two ditches, which, as is characteristic of long barrows, do not extend round the ends; from these ditches the chalk, of which the mound is chiefly constructed, was obtained. Extending along the centre, at the base of this huge tumulus, in a heap of large flints and sarsen stones, piled up in a long ridge five feet high, described by Mr. Cunnington as 'resembling the roof of a house.'

Beneath this ridge, towards the eastern and highest end of the barrow, the human bones were found. They cannot be described as skeletons, for they were interred in great disorder, thrown together promiscuously. In one instance, for example, a mandible was found with the left condyle passed through the opening of a vertebra dentata. More than half the crania had been cleft or violently fractured. Many persons were interred in this barrow. Dr. Thurnam obtained six crania, and on the late occasion I found the skulls, or portions of skulls, of fourteen or more individuals."

Mr. Hepburn showed some specimens obtained by one of his patients from a small island off the west coast of Ireland. At low tide this island could be reached by wading, and its surface was found to be strewn with human bones. Amongst those now shown, was the lower jaw of a child about eleven years of age, and another of a child of eight. There were also several adult jaws, and one of an old person. There were no means of judging as to the age of these specimens, and the people of the neighbourhood could give no information respecting them; but they resembled those shown by Mr. Cunnington as regards the splendid quality of the teeth, which, though in some cases much worn down by use, presented no trace of decay.

EVOLUTION OF PRESERVING TEETH BY FILLING—MATERIALS AND METHODS.*

By Dr. William H. Atkinson, M.D., D.D.S.

As evolution in the great sense must be a secondary process of serial reversion of "involution," in accordance with the plan of all structures, it will readily be seen that imperfection of build according to type lays the foundation for the necessity of redemption and preservation. This is pre-eminently so in the case of unsound teeth. It will hardly be necessary to state here that which is involved in the first sentence, viz., that perfect structures do not decay prematurely in whole or in part. The loss of teeth by decay first induced men to seek means of arrest of the decay, and restoration of the lost parts. The recorded history of the attempts to accomplish this desirable purpose is involved in such ambiguity and contradiction as to materials and methods resorted to, that it is deemed unwise even to attempt a synopsis of the incongruous jumble. History is but the record of the observations and interpretations of individuals at best; therefore, allow me to detail in simple narration the observations of one individual.

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* A paper read before the First District Dental Society of New York, and reported in the *Dental Cosmos*.

The first time that the subject was brought to my attention, when I was less than ten years old, was the practice resorted to by my eldest brother and a companion of his, in the wilds of the then new settlement in Mercer County, Pennsylvania, who bit slugs of lead into the cavities of decay in their molars to prevent the tough, wild meats and coarse foods from annoying them in eating. With this incipient effort they found so much advantage that they cast about for something more plastic with which to stop the irregular cavities, and they used resinous gums of pine and hemlock to saturate, by heat, small sticks of tough woods—oak, hickory, or pine—which they drove into the cavities, and cut off with their pocket-knives, being careful to place a portion of the gum into the cavity before driving the stick. The next step was the advent of a Methodist minister, who carried a small pocket-case of scalers, with which he cleaned the teeth of our family of the accumulations about their necks, and gave us instructions how to keep them clean. Subsequently, setting pivot-teeth of porcelain on roots and filling cavities with amalgam were brought to notice by a man calling himself a dentist.

It is fair to presume that an aggregation of experiences, each beginning *de novo*, introduced in various localities various methods and modes of accomplishing the desirable object of arresting decay in teeth by filling. In the second or third year of my attempt to study medicine I was induced to take a course of instruction in excising decayed crowns and setting pivot-teeth upon their roots with hickory-wood pivots, and filling cavities with amalgam and tin, by some recipe regarded as precious. Among the recipes was one for making Crawcour amalgam. Not being able to purchase such instruments as the dentist had for excavating and filling, I noted them particularly as to form and variety, and when he had gone, I bought Allerton's shoemakers' awls, from which were constructed excavators and pluggers (as we then called them), which I fitted to socket handles made for me by a gunsmith. These were of but two shapes, round and flat-pointed, bent at various angles, according to fancy. The flat points were sometimes slightly nicked with a file, the round points globular or flat on the end. With these I worked for years, making additions from time to time until I could procure better ones in the market. For finishing fillings I used such files as I could procure. With no better preparation than here indicated, I was able to obtain commendation from ministers, doctors, and lawyers, with whose recommendations as a competent and reliable dentist, I went from place to place and offered my services to the people, with an acceptance that is more of a marvel to me now than it was then, and I have since seen many teeth then filled that remained in place for years, some of them over forty. The early teachers in dentistry of the East, who made dentists by the short method of recipes and secret oral instructions, when asked by pupils, "How do you fill teeth?" replied, "That you must find out—as I did—by practice." A broken excavator accidentally picked up and used as a filler, packed the gold so well as to suggest the use of serrated ends for pluggers. This was followed by deep serrations of coarse teeth, which were modified from time to time to finer and finer teeth, until at last perfectly smooth points came again into use in my practice. Instruments follow the order of evolution which the involution of necessity demands, and are at first dimly foreshadowed by revelations to the geniuses who are said to invent them. They are discoveries rather than inventions. As will be seen, the first instructions I used were copies of those shown to me by my instructor. The difference between the knowledge of instructors, then, is the difference between partial and full text of instructors' lay-out or classification of means and ends sought to be brought about. The dim, shadowy suggestions of inspirational necessities are but the thin outline of the means to the true order of fulfilling the necessary demands, when they shall have been materialised in accordance with the exact type of the shadow presented to our perception. This is difficult for the novice to do, by reason of the diversion of his untrained attention from previous perceptions as to the limitations of possibilities in psychics and mechanics; hence, "inventors" who follow their inspirations are "cranks" in the estimation of all who assume a knowledge they cannot prove themselves to be possessed of.

Such is the strength of "habit," that we cling to that already formulated, even upon doubtful premise, rather than open ourselves freely to the new impulse. In saying this, I speak out my own inmost experience, as exemplified in the case of the broken excavator, which gave the ideal perfection of serrated end for impacting gold. It took years to free me from the dictum of partial knowledge of the principles involved in correct practices of filling teeth. Outside interferences, with obedience to our inspirations, which would bring rapid, safe, and sure progress in the right line of development, are chiefly chargeable with the deflections we make, and the slow releasing of hold upon embryonic conditions of mind, body, and practice which we are thus led to pursue. The order of evolution from round, flat, triangular, and square, to avoid points of instruments, need not have taken so many years to complete could we only have been free from the assumption that each step was the end of progress towards perfection. The set of fillers known as "Omegas," and called by my name, do not quite perfect the ideal from which they sprang. The reason for this is complicated and more honourable than appears without historical detail of how the set was made. The plan of the type for fillers given me was that of an egg, modifications of which present segments of a sphere from the point to the triangle, square, and wedge, by slicing away the side to produce the desired shapes. The impacting face may be quite smooth, slightly roughened, or serrated finely or coarsely with shallow or deep cuts, and yet not depart from the ideal of direct packing of the gold ahead of the instrument. Whether we are nearing the end of improvement in filling teeth or not, we are at least progressing in the order of the inspirational necessities from early practices, through varied experiences of means and methods down to the summation of these in the Herbst method, by using the hand impact and rotation of point in combination, thus securing adaptation of filling to wall of cavity heretofore unattained by any method. The hand may rotate the unpolished end of the filler, and effect the work in good shape; but the rotation of the point in the hand-piece of the engine saves time, and secures superiority of adaptation, besides being less unpleasant to the patient. In fact, in Herbst's own hand, the pressure of packing the gold was rather pleasurable than otherwise in my own mouth. A glance at what has already been said will reveal the sum of a long and varied trial of means and methods resorted to in attempts to save decayed teeth by filling. No single, partial presentment of method can compare with a combination of all the good points in the different methods conjoined in successive adaptation, which I regard the Herbst method as presenting.

THE MANIPULATION OF AMALGAM UNDER NEW CONDITIONS.

By Frederick A. Bellamy, L.D.S.

In your last issue you recorded a demonstration given by Dr. Rees before a New York Society, regarding the manipulation of amalgam under new conditions. Though I would fain allow the credit of this idea to rest with Dr. Rees, as it is presumably original, as far as he is concerned, yet I feel I may venture to say I have employed his method, further modified, for a very long time, with the most gratifying results ; and I communicated the *modus operandi* to several practitioners many months ago, who now attest to its worth.

Having prepared my cavity, I mix the requisite quantity of amalgam with rather more mercury than for an ordinary amalgam filling ; then take about one-fourth of the bulk, and squeeze the surplus mercury therefrom ; this drier portion I reserve for finishing or coating my stopping. I next mix the osteo stopping upon a slab as usual (any of the oxy-chlorides will answer) and when thoroughly mixed, quickly add the remainder of the amalgam, working the two into a plastic mass, which is then ready for the cavity. Three-fourths of the cavity I fill with this hybrid substance, employing the ordinary amalgam I had retained for the purpose, for completing the stopping. When the osteo and amalgam are mixed to the right consistency, the result is a concrete, possessing an extraordinary adhesive quality, which is of invaluable service when filling a certain class of cavities. Perhaps I have found it most welcome when filling saucer-shaped cavities on the buccal surfaces of lower wisdoms ; but in most cases where sensitive dentine or extreme nervousness defies thorough excavation and scientific shaping of a hollow for the retention of a metal plug, it is very useful, and certainly a valuable " wrinkle" for a dental surgery. The cavity to be stopped should, by preference, be dry, though it need not of necessity be absolutely so, as a small amount of moisture will effect a union with the chloride of zinc ; but this, though not detracting from the adhesion of the matter to the walls, tends to retard its setting, which in no case is very rapid.

Dr. Rees' principle of first lining the coating with osteo is ingenuous ; but the pure amalgam, I opine, would not adhere to the osteo foundation with as much tenacity as if a portion of amalgam had been incorporated with the cement before insertion.

"THE GOOD OLD TIMES."—An American dentist writes : From forty to fifty years ago, itinerant dentists used to go from house to house, and their outfit in the way of material consisted of a Spanish quarter and a vial of mercury ; their case of instruments, a file and two or three drills, or excavators. I have seen a filling made under these circumstances that did good service for twenty-five years, when it was removed and the cavity filled with gold."

THE DENTAL PROFESSION OF EUROPE.—According to the most recent statistics, says the *Dental Review*, the number of dentists practising in some countries of the world are as follows :

Nation.	Population.	Year.	No. of Dentists.		
United States	50.445,346	1880	12,017	(61 females)	(1880)
France	37,672,048	1880	1,037		(1885)
Germany	45,234,061	1880	570	(18 females)	(1885)
Austro-Hungary	37,869,954	1876	163	(2 females)	(1885)
Belgium	5,585,846	1877	107		(1885)
Switzerland	2,846,101	1876	97		(1885)

In some of the cities of Germany and Austria the relative proportion of dentists to the population is as follows :—

Berlin	1,230,000,	75	dentists.
Vienna	1,104,000,	64	,,
Budapest	365,000,	14	,,
Hamburg	290,000,	32	,,
Breslau	295,000,	13	,,
Munich	241,000,	15	,,
Dresden	240,000,	16	,,
Prague	210,000,	7	,,
Leipzig	165,000,	13	,,
Küinigsberg	155,000,	9	,,
Cologne	152,000,	10	,,
Frankfurt	147,000,	23	,,
Hanover	130,000,	11	dentists.
Bremen	120,000,	13	,,
Danzig	120,000,	6	,,
Strassburg	111,000,	4	,,
Stuttgart	111,000,	14	,,
Dösseldorf	110,000,	4	,,
Lemberg	110,000,	4	,,
Chemnitz	106,000,	3	,,
Nürdnerg	106,000,	5	,,
Elberfeld	105,000,	3	,,
Magdeburg	105,000,	7	,,
Stettin	101,000,	5	,,

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LONDON, FEBRUARY 1, 1887.

ORAL DEFORMITIES.

Mr. Warrington Haward has, in a recent clinical lecture, delivered at St.George's Hospital, brought before his hearers the subject of the treatment of defects of speech by surgical methods. Now, although this matter is unquestionably one of practical utility to the practitioner of surgery, yet it is more especially the subject which concerns dentists. Where surgery fails to achieve a cure, the skill of the dentist, in nine cases out of ten, surmounts every difficulty ; and it is no uncommon occurrence for the dentist's aid to be called in to assist the efforts of surgery in this direction, and to ensure the success of an otherwise doubtful endeavour. Dealing with the subject of defects in speech due to oral deformities, for the instruction of medical students, it is in no way surprising that Mr. Warrington Haward should have passed over without mention the great resources which the art of dentistry is in possession of for the purpose of ameliorating or removing mal-enunciation and vicious utterance. At the same time, it is to be regretted that the lecturer did not warn his hearers against the danger which exists, lest surgeons should mistake, and confound two very different things—the success of a surgery operation as an *operation*, and its success as a means of curing malpronunciation. Surgeons too often find the most successful operation fails utterly as far as the remedying speech goes ; and this failure, although in part due to the cause Mr. Haward recites, viz., a want of subsequent education in speaking under a skilled master, is also brought about by the very physical conditions which exist, *e.g.*, deficient tissue to supply an efficient soft palate after staphylorrhaphy. In these cases much more can be done by the dentist than the surgeon ; and further, the latter's efforts may even be actually detrimental, and impose impediments in the way of the dentist who subsequently takes the case in hand. However, dentists will find in the lecture above alluded to, a really valuable suggestion, and that is, that after remedial measures have successfully grappled with and surmounted the difficulties of the case, that definite instruction should be insisted upon, and the case only deemed *finished* when such instruction has been duly carried into practice. Of course, special teachers exist who devote themselves to the study of oratory and the cure of defects in speech ; and where access can be had to their instruction, it is best to rely on their methods. But it often happens that patients are unable to avail themselves of such extraneous aid, and in these cases it is important that the dentist should be able to roughly outline a course of study, such as any intelligent, cultivated parent may adopt with a child.

Perhaps many dental practitioners, while fully alive to that defect in enunciation produced by congenital or acquired perforation of the hard or soft palate, are yet less prepared to suggest treatment when brought face to face with various other malformations or imperfections giving rise to a vitiated utterance. High arching of the maxillary processes of the superior maxillæ frequently occasions marked indistinctness, and dentists would do well to undertake such cases, and so avoid the more severe surgical treatment of stripping the soft parts from the bones, and by suturing the edges after removing a central wedge-shaped portion, such as described by Mr. Warrington Haward, for lowering the palatine arch. Lisping, often a marked defect in speaking, tending to various bad habits of speech, is commonly due to widely parted teeth, or absence of teeth altogether, a state of things the dentist has only to recognise in order to remedy. Children who have the misfortune to lose their front teeth early are very liable to contract extremely slovenly ways of speaking, which habits are only overcome by much careful practice and instruction in speaking. As a rule, however, children are more easily and more satisfactorily taught how to unlearn malpronunciation than is the case with adults; so that it is a manifest advantage when possible to induce parents to adopt the necessary steps while the children are young. The dentist who takes a wide view of his profession will be on the look out for these cases, and will, from the knowledge of the subject which he should possess, be able to study them, to ascertain whether the speech defect comes really from an oral deformity such as he can surmount, or whether it arises from bad habits; in either case he should be prepared to advise. It would be foreign to our purpose in this place to enter into detail concerning any especial methods pursued for the relief of oral defects; suffice it to say that, although every dentist is supposed to be equal to the treatment of cleft palate, etc., by obturators or other appliances, yet the cases present such individual peculiarities, that considerable experience and special study are needed in order to bring about a successful issue to the cases, and just in proportion to this amount of study and attention to detail is the result likely to prove a credit to the designer.

Further, as we hinted above, the dentist must be prepared to push his services beyond the actual mechanical remedying of defects; he must be able to render assistance to his patient so as to point out how he (the patient) should adjust his modes of pronunciation to the altered conditions obtaining in his mouth.

EXAMINATION FOR L.D.S., ENG.—Intending candidates for this Examination should note that the next Examination for the L.D.S., England, will be held on February 22nd. 23rd. 24th. Schedules to be sent in 10 days before the Examination.

DENTAL TEACHING AT BERLIN.—We have from time to time had occasion to draw attention to the excellence of the opportunities offered by the University of Berlin, to students of dentistry. It must be very gratifying to the promoters and teachers at the centre to see how successful their efforts have been. We learn that the patients have numbered from 9.000 to 10,000, and that anæsthetics were administered about 250 times. During the last winter course, in the operative department, between 600 and 700 persons received about 1,000 fillings. In the prosthetic department during the same period 1,770 artificial dentures were made, of which number 809 were non-practical, and 964 practical cases. At the last session 121 persons matriculated, and since the opening of the dental department the number admitted to examination has largely increased ; and at the last examination 29 candidates presented themselves. At present the various countries of Austria, Russia, Holland, Servia, Roumania, Turkey, Japan, South America, and the United States are represented in the list of students who have matriculated.

Recutting Engine Burs.—Use a No. 2 safe-sided, fine, single-cut separating file, ground (on a corundum stone) to a feather edge from the safe or uncut side, at an angle of about 40 degrees. The temper of the bur may be drawn by holding the bur end in a coal fire till a dull red heat is produced, then dropping it on the hot part of the stove to cool slowly. If a pair of 5 or 6 inch focal distance (No. 5 or 6) spectacles be used, and the bur be placed in their focus, it will appear like the bur of a coffee mill, and the cutting with the prepared file can be easily done. For tempering, a small alcohol lamp may be used. The outer surface of the flame only produces heat. To prevent burning the steel point, the shank needs some heating before the bur is raised to the proper temperature. By a little dexterity, the bulb part only needs to be heated to a cherry red, and instantly dropped into a small vessel filled with water propped up quite close to the flame. The immersion must, in small instruments, be instantaneous, or the temper required will not be obtained. No drawing of temper is required. Sandpapering, to brighten the shanks, makes them ready for use. The *Independent Practitioner* also suggests skirt-braid loosely twisted before joining the ends, makes an excellent engine cord. Emery cloth may be cut into strips for polishing fillings with a pair of dime cast-iron shears, which may be sharpened on corundum stones. Their hardness makes them really better than the high priced article. Thin slices of cork make excellent coveings for exposed pulps. They are non-conductors of heat and cold, durable and pliable.

SCHOOL OF DENTAL SURGERY IN FRANCE.—Our contemporary, *The Journal of the British Medical Association*, says: At the recent distribution of prizes aud diplomas of the Ecole Dentaire de France at the Institute Odonto-technique there was a brilliant assemblage. M. Lockroy, Minister of Commerce, was to have presided at the ceremony, but, being prevented at the last moment, was replaced by Professor Gavarret, Medical Inspector-General in France, and member of the Comité Consultatif of Hygiene. Professor Lefort, member of the Academy of Medicine, and the Mayor of the 6th *arrondissement*, were seated on either side of Professor Gavarret. A considerable number of deputies, municipal councillors, mayors, distinguished members of the medical profession, members of the Conseil de Surveillance des Hôpitaux, and members of the Press were present. Adresses were delivvred by M. Brasseur, director of the Ecole Dentaire, Dr. Ramonat, one of the professors, and by M. Gavarret. The aim of the Ecole Dentaire is to train skilful practitioners, and to ensure gratuitous attendance to a considerable number of poor people, and to the municipal schools. First started by private enterprise, the Ecole Dentaire has now a council which includes many of the leaders in medicine and surgery, such as MM. Gosselin, Lefort, Gavarret, Béclard, Brouardel, Al. Fournier, Duplay, Guyon, Trélat, Richet, and Sappey. Medals and diplomas were awarded to MM. Saussin, Vauthier, Wisner, Hyvert, Helot, and Klett. The prize of the Société Odonto-technique was awarded to Dr. Eyssautier.

DENTAL RECREATIONS.—Another "Smoking Concert" was given on 21st January, by the Students' Athletic Club of the London Dental Hospital. Like its predecessors, it was very successful, the *repertoire* being excellent, and effectively rendered.

MR. KINGSLEY ON DENTISTRY.—Mr. Kingsley has been running amuck against dentists being looked upon as surgeons; he will have it that they have nothing to do with medical practitioners, but are a select and peculiar people. We shall have something more to say on this matter *shortly*.

YOUNGER'S OPERATION FOR IMPLANTING TEETH.—Those who are inclined to try this novel procedure will be glad to profit by Mr. William Herbert Rollins' ingeniously devised instruments. He thus describes them in the *Cosmos*: "The first instrument is a medium size of one of my tubular knives. With this the soft tissues are cut to the bone, requiring about five seconds. For the incisors and cuspids, the hole this makes corresponds fairly with the shape of the tooth at the neck. For the bicuspids, which have a more or less oblong shape on cross-section, this round hole would, apparently, not be of the correct shape. It is only necessary, however, to have a tubular knife which measures a little less in circumference than the tooth at its neck to insure a perfect fit, for the soft tissues are elastic enough to conform to the tooth if the hole is large enough. The second instrument is a spiral knife with two blades. This is pressed against the bone and pushed in to the shoulder, which should be adjusted to the proper position. This instrument cuts the bone with great rapidity and without any special pain. The third instrument is a similar knife, only more conical. This is pressed into the hole previously made, and then swayed to enlarge the cavity to fit the root. It will not be necessary to use this but twice, as the eye carries the shape of the root with enough accuracy to enable one to get the hole of almost the right shape the first time."

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

SURGICAL DISEASES OF THE TONGUE.

By H. A. Smith, D.D.S., Cincinnati, Ohio.

The importance of the dentist's power of recognising the morbid conditions of the tongue, is insisted upon.

If the teeth are healthy and intact, they form a protecting wall which shields the tongue from harm, but if diseased or broken down they become the cause of a variety of diseases; and when the tongue is subject to organic disease it may cause the destruction of the teeth.

Parasitic affections of the tongue are first mentioned. While animal parasites are rarely found on the tongue, it is constantly infested by *vegetable* parasites; the presence of vegetable parasites causes *thrush*, a membranous disease not only of the tongue, but of the inside of the mouth generally. The disease depends upon the presence of a fungus (*oidium albicans*), identical with the oidium lactis, the cause of the acid fermentation of milk.

These two parasites being morphologically alike, we should expect to find in the mouths of children who are attacked with thrush after the teeth begin to erupt that caries would be more prevalent with those who are fed with a spoon than those fed with mother's milk. In children artificially fed the mouth shows more constantly an acid reaction. In the act of sucking the saliva is secreted in larger quantities, and being alkaline, the acidity of the fluids of the mouth neutralised to a degree not found in children fed with a spoon.

Furred tongue is due to a deposit of micro-organisms —micro-cocci and bacillus subtilis.

The vegetable spores are deposited in the filiform papillæ of the tongue from the food, and from the inspired air, and, finding a favourable habitat, the germ grows rapidly, especially at night, when the tongue is comparatively still.

If a person eats on one side of the mouth, the tongue on the opposite side willl show more or less furring. Hilton attributes this furring of the tongue to disturbance of function and nutrition by reflex action through the fifth nerve. But Hutchinson explains most cases of unilateral furring by mechanical action.

Ulcers of tongue. The traumatic variety, those that are caused by the teeth wounding or irritating the tongue. Unless the patient is subject to chronic glossitis, these simple ulcers are speedily cured by removal of the cause of disturbance, *e g.*, smoothing the jagged edge of the tooth, or extraction ; or, if the ulcers are caused by badly-fitting artificial teeth, the substitution of a better set.

Ulcers which form on the under side of the tongues of children attacked by whooping cough, are probably caused by the irritation of the rubbing of the tongue against the teeth during the paroxysms of coughing.

The action of amalgam fillings, when coming in contact with the tongue, may cause a whitish aphthous patch from epithelial thickening and erosion. This is probably due to roughness of the filling or margin of the cavity acting as a mechanical irritant upon the surface in contact with the filling.

Aphthous ulcers upon the tongue and mucous membrane of the mouths of adults, although more commonly found among children, they are possibly the result of contagion. If a specific parasite is present a dentist, may convey the pathogenic germ from an aphthous patient for whom he has operated to the mouth of another susceptible patient.

CANCER OF THE TONGUE

Among the exciting causes of *cancer* of the tongue are bad teeth ; ill-fitting plates ; coarse, hot, and highly-spiced food ; the constant friction of the mouth-piece in using a tobacco pipe, chewing tobacco, and the injudicious use of caustics in treating sores on the tongue (Butlin).

Rare in young adult life, it is common between 40 and 70.

The teeth, between the ages of 40 and 70, if neglected, are most likely to take on the conditions injurious to the tongue. To the hard usage and greater neglect to which the teeth of men are subjected, may be attributed the greater frequency of carcinoma in males, as well as the fact that women are not given to drinking, smoking, and chewing.

Carcinoma may attack any part of the tongue ; it is most frequently seated in the parts in contact with the teeth.

Of 80 cases Butlin finds in the

Root of the tongue	1
Anterior half and top	3
Right border	12
Left border	17
Left side	16
Right side	11
Border	1
Dorsum	15
Right underside	2
Left underside	1
Whole tongue	1
Total	80

The writer thinks both smoking and chewing pre-dispose to cancer.

Diagnosis of lingual cancer is difficult, on account of the resemblance of syphilitic and of tubercular ulceration, of fissures of the tongue and sometimes of simple ulcers, to carcinoma ; more so as sometimes these diseases are transformed into carcinoma by almost imperceptible gradations.

In all doubtful cases the microscope is the most valuable and reliable aid to diagnosis.

As dentists, our attention is frequently directed to the pre-cancerous conditions of the tongue. If a lesion of the tongue is discovered, every possible source of irritation should be searched for, and as carefully removed And since the most common of these sources of irritation are associated with the teeth, the dentist, by recognising the pre-cancerous condition of the tongue, and removing the cause of the irritation, may prevent a simple ulcer of the tongue from developing into carcinoma.

ÆSTHETIC DENTISTRY.

By W. Storer How, D.D.S., Philadelphia, Pa.

The writer proposes to describe a series of operations which were initiated in an experiment upon the writer's own central incisors in the year 1854. It is important, the writer thinks, to be able to correct mal-dental expression.

He proposes to exhibit some changes for the better, effected by merely abrading the masticating surfaces of the teeth when they present certain abnormalities of configuration and relation. In every observed instance of this kind, a careful preliminary study is necessary to avoid disagreeable surprises both to the dentist and the patient ; a warning was suggested by the case of one lady, who, after a considerable corrective abrasion of the superior centrals, was found to lisp badly, a defect which fortunately dissappeared in the course of a few days. Nothing but careful study and experience can develop the artistic sense to a degree that will enable one to forecast the shades of expression, that it may be desirable to give the patient by well-considered alterations in the length and edge-shape of an oral tooth or teeth.

He cites an instance of the effect of an habitual and excessive biting of thread, and shows how correction may be effected by abrasive operation. In cases such as are illustrated here study lines may be drawn with India-ink on the natural teeth, but are not always worked up to, as from time to time the effects produced by progressive steps in the process are to be carefully observed, and the original plan not unfrequently modified. Similar diversions will also be produced by the indisposition of the patient to submit to changes proposed. Another case, in which the upper central incisors were very much longer than the laterals, obtaining the owner the *sobriquet* of " The Walrus," were abraded to the level of the other teeth. Although the operation caused pain, that is always consequent upon abrasion of the zone between the enamel and the dentine of a living tooth. No pain-obtunder has proved effective during the progress of such of these operations as involved this peripheral nerve-zone, and only time has sufficed to destroy the subsequent sensitiveness to hot, cold, or hard ingesta. Time has, however, in every observed instance, been found to heal without destroying such teeth, the extent of the artificial abrasion having in no case been sufficient to encroach upon the immediate vicinity of the dental pulp.

The inferior incisors are often subjects for the exercise of this art, by reason of their apparent proclivity to the assumption of irregular and projecting positions, the unsightly effects of which may not seldom be quickly corrected by suitable abrasive means.

Cases occasionally appear in which the teeth are kept an eighth of an inch or further apart by the premature occlusion of the molars and bicuspids on one or both sides of the mouth, which thus remains partially open to the great discomfort, disfigurement, and interference with the speech of the afflicted person. Other means might avail for the correction of this deformity, but not unfrequently it could be quickly remedied by heroic grinding of the propping teeth. This might easily be accomplished by the use of stump corundum wheels and points.

In a numerous class of cases, prominent cuspids give a dog-like or wolfish expression, and this may be transformed into a benign expression by the change of tusks into cuspids.

Concerning details of a method of procedure, it remains to be said that, when any considerable part of a front tooth is to be removed, a coarse, double-cut, quarter-inch, square, safe-sided file is employed, and used no longer than it has keen teeth, because the accompanying disagreeable sensations, either before or after the sensitive zone is reached, are much more easily borne while the file is made to cut quickly and keenly. As the vicinity of an adjacent tooth or teeth is approached, the safe side of the coarse file is not deemed safe enough, and a piece of very thin, smooth steel is inserted between the teeth as a protective barrier, to ensure against any chance diversion of the file. The angle at which the file must be held to give the proper bevel inward, and the constant employment of the push cut to avoid chipping the external surface of the enamel, are points to be kept constantly in mind. Frequent rests for inspection will prevent excessive abrasion, and relieve the strain upon the endurance of the patient.

When comparatively little of the enamel is to be removed from the cutting edge of a tooth, the stump corundum wheel or point will serve the purpose ; but, as a rule, these edges are best shaped by safe-sided, flat files, of various grades of cut, and for finishing the corners, which in outline contribute in the greatest degree to the expression of character in a tooth, a smooth file, having a safe knife-edge, is indispensable in connection with the sheet-metal protector between the teeth, or a separator like Dr. Perry's. It is well to be sure that the file-edge is safe by grinding it smooth and thin on the side of a corundum wheel.

For grinding out depressions, suitable corundum points are to be used, followed by Hindostan and Scotch stones and wood polishing points. In some cases the brown discolouration at the bottom of a pit can be best removed with a copper point and fine corundum powder.

Modern dental engine appliances in brush, wheel, cap, and disc forms, and made of many different materials, permit a choice of effective means for polishing every portion of abraded tooth surface, and such final finish should always conclude every operation of the kind herein described and shown.

By the use of separators, immediate access can be had to the sides of crowded or malformed front teeth, and abrasive means employed to improve the shape and readjust the relations of those teeth in a manner that shall at once become apparent in a more pleasing expression of the mouth.

CROWN AND BRIDGE-WORK.

By G. W. Melotte, Ithaca, N. Y.

He cites a case in which he had to supply a lateral and a bicuspid. In this instance the cuspid could be cut off, and the root collared and capped in combination with a pin entering the enlarged pulp canal ; but, to avoid the objection to cutting off sound teeth, he cuts a shoulder on the lingual portion of the cuspid, and suitably shaping its sides to permit a close fitting of the collar just under the free margin of the gum. A narrow strip of pure pattern tin, bent tight around the tooth-neck, and cut through with a knife at the lap on the labial surface, will serve as a measure for the length of a strip of 22-carat gold plate, No. 29 thick, and as wide as the length of the distal side of the cuspid. The ends of the gold are then squared, and with round-nosed pliers brought evenly together, to be held in flush contact by the soldering-clamp shown. The soldered collar, with its joint side inward, is then adjusted on the tooth as accurately as possible, giving slight blows with a mallet until the collar touches the gum, when it should be marked to indicate the necessary trimming to conform it to the gum contour. After it has been thus trimmed, the edges bevelled, the labial part swelled with contouring pliers, and the lingual part cut down to about one-tenth of an inch in width, the collar is again driven on. A stump corundum wheel is then used to grind a shoulder on the lingual surface of the tooth, grinding also the edges of the collar flush with the shoulder. The collar is again removed, and a piece of thin platinum plate, about No. 32, sufficient to cover the lingual surface of the the tooth, is caught on the lingual edge of the collar by the least bit of solder, and all put in place on the cuspid. The platinum should now be burnished on to the shoulder, and over the tooth and collar. After trimming, and careful replacement and burnishing on the tooth, the collar and half cap are removed, filled with wet plaster and sand, and the platinum soldered to the gold. It is then placed on the tooth, burnished into all the inequalities of the tooth, very carefully removed, invested, and enough solder flowed over the platinum to cover and give it strength.

Such work, although taking long to describe, can be done expeditiously in practice.

In the preparation for fitting a collar on the first molar, he would have wedged or otherwise separated it from the second molar, so that a piece of sheet brass might be put in place, and an impression taken in plaster, which if allowed to get hard, would bring away the metal, if not, it could not be replaced in the plaster. Melted fusible metal, when near the cooling point, is then poured into the impression, and when cold will allow the safe removal of both the plaster and the metal strip. On this metal model a collar can be formed that will accurately fit the molar. If the molar has no antagonist a cup may at once be struck up on the model, but if there be an antagonist the cusps of the natural molar should be removed by grinding at points where the occluding tooth will admit of sufficient thickness of the gold cap. An exact copy of the ground cusps can then be made in less than five minutes, by the use of Moldine and its accessories, and the process is as follows: Make the tooth perfectly dry. Put the collar on it. Nearly fill up the cup with Moldine, and coat it with soapstone powder. Press the compound on the tooth and collar firmly to about one-fourth the depth of the tooth. Carefully remove the cup; trim off any overhanging material, and place the rubber ring over the cup to about one half the depth of the ring. Melt the fusible metal, and pour it as cool as it will run from the iron ladle. When the metal is hard, remove it with the ring, taking care not to impair the impression, which can be used again if the die is found imperfect or gets injured in use. Place the die and ring in cold water, to remain until quite cooled. While the die is wet and held over a basin of water, pour into the ring fusible metal which has been stirred until it begins to granulate, and quickly immerse all in the water. The die and counter-die should separate readily by tapping them with a hammer, but if they stick others can be quickly made from the same impression, by the same method, using more care. With this die and its counter-die, a piece of No. 29 or 30 gold plate is swaged to fit perfectly the cusps and collar, which, when removed, can be held to its place on the cap by the soldering-clamp, using spring pressure enough merely to hold them together for careful soldering with the pointed flame so as not to unsolder the collar.

The caps being in place on the cuspid and molar, an impression is taken with plaster; the caps accurately set in the impression, and hard wax melted with a hot spatula around the edges of the caps. The impression then is thoroughly coated with sandarac varnish,after which it is dipped for a moment in water, and filled with a wet mixture of one part marble-dust with two parts of plaster ; using great care to perfectly fill the caps and moulds of the teeth. Wait until this mixture has become quite hard ; remove the cup, and with a suitable knife chip off the plaster without marring the cast; secure a good articulating impression, and transfer it to the cast to obtain an exact reproduction of the relative occlusions of all the teeth involved.

OHIO STATE JOURNAL.

A CRITICISM OF THE HERBST METHOD OF FILLING TEETH.

By Dr. W. W. Allport, Chicago, Ill.

Although entertaining an opinion unfavourable to Dr. Herbst's method, Dr. Allport thinks that gold can be well condensed by his system ; most excellent fillings may also be made with crystal or plastic gold, for he has put in hundreds, and even thousands of them. But experience and observation have taught that quite as good operations can be made with less exactness in details and labour, than is required in the use of this preparation of gold.

With a full acknowledgment of the possibilities that may be attained with this form of gold, the exactness and labour required to reach the highest results in its use are so great, that it was long ago abandoned by many. Its general use, however, is neither practicable nor desirable, because quite as good results can be reached with foil, with much less time and labour.

Considering the objections to Herbst's method, he finds first there is great difficulty, and sometimes impossibility, of reaching all parts of a cavity with the straight and clumsy instruments that must be used by this method,—cavities which could be readily reached, and the filling material properly packed with the variously shaped hand or mallet-pressure instruments to be found in all well equipped operating cases. In many fissures or deep undercuts that could readily be filled by the old method, a doubt must always exist as to whether by this new method such places are perfectly filled or not, for Dr. Herbst himself admits that the only way he can be certain in this matter, is to test the questionable places with small hand plugger points. It requires no argument to show that a plugger which cannot be relied upon to make known a defective place in a filling, cannot with certainty be relied upon to make the filling good at that point, for an instrument which is too clumsy or ill adapted to find the defect with, is certainly not well adapted to properly fill it with, when found. If hand or mallet pluggers can be more safely relied upon to find and fill difficult accessible points about a filling, than can the Herbst method and pluggers, their superiority for filling the balance of the cavity, or for making simple fillings in easily accessible places can hardly be justified.

Second. To make this method available, we are instructed to cut away so much of the sound and strong portions of the tissue as will make all portions of cavities accessible to these arbitrary and clumsy instruments. This procedure is bad, because no system of practice shonld be adopted that makes it necessary to sacrifice sound, healthy tooth structure, that could be saved by the use of other materials, instruments or methods of practice.

In preparing a cavity to receive a filling, it is the duty of the dentist to remove all tooth structure that cannot be saved in a healthy and useful condition, but no more. He has the right to cut away as much of the sound structure of a tooth as may be necessary to secure a firm foundation and retention of his filling; also to select a filling most easily adapted to the intricacies of the cavity to be filled; also that instruments used in packing it are such as are the best calculated to reach all places in the cavity rendered difficult of access, by virtue of saving portions of the tooth, the removal of which would unnecessarily and for ever mar its beauty and harmony. To remove more than this to suit his own convenience, or to enable him to use any particular materials or instruments in filling, might, Dr. Talbot thinks, without a very great stretch of imagination or injustice, be considered mal-practice, in a mild form, at least.

This applies not only to Herbst's method, but also to fillings put in with cohesive foil. Teeth that could be just as safely filled and much more of the tooth structure saved by use of noncohesive combined with cohesive foil, are, in part, mercilessly destroyed, in order to employ cohesive foil exclusively.

In spite of the alleged expedition with which fillings can be effected by Herbst's method, the writer thinks other methods are really quicker in the end. No doubt fillings can be put in by this process very quickly, but the highest results from it will only be reached by it after much painstaking labour.

Dr. Talbot further asserts that after seeing Herbst and others fill by that method, their results are not so good as when fillings are carried out by the older plans.

Fourth. That quite as good or even better operations can be made under circumstances favourable for the Herbst method by the use of suitable instruments and non-cohesive foil enamelled with cohesive foil, under mallet pressure, and without the necessity of sacrificing so much sound tooth structure.

Although this method, as a general system of filling teeth, is not warranted, it is possible, Dr. Talbot admits, that as an adjunct to other methods of practice it may be made useful. He believes it can be made useful at the cervical walls of cavities, especially when the matrix is used. The surface of the pluggers being smooth, and the impact made without violent concussion, when proper access can be had, it should be advantageously used in packing gold against margins of cavities, preventing the fracturing of the enamel which so frequently occurs in the use of the mallet pluggers. Possibly, he thinks Herbst's method could be followed in some other cases. By its general adoption, or too frequent use, frequent failure would be the result, and the method brought into undeserved disrepute ; with its abandonment, even while it could be used to advantage, thereby losing, in a measure, at least, the benefits that might follow from a judicious advocacy and use of it.

A CASE IN PRACTICE.

By George W. Keely, D.D.S., *Oxford*, *Ohio.*

The premature extraction of the temporary cuspids is bad, for it causes the earlier eruption of the first permanent bicuspid, which comes forward, and gets in the way of the permanent cuspid. It is important to preserve all the temporary teeth until their mission is accomplished, the *premature loss* of the *cuspids* and *molars* is the most prolific cause of a crowded and irregular condition of the permanent teeth.

In the case cited, the left inferior second bicuspid and permanent first molar were in contact, and the second bicuspid was being crowded wholly outside the arch ; this condition also appears on the other side, being caused by the premature extraction of the temporary molars. The permanent second molars (inferior) were fully erupted, this being caused by the first molar coming forward and taking up the space due the second bicuspid, thus giving the second molar ample room to erupt ; while in the upper jaw the temporary molars were still in place, and the permanent second molars were just appearing. The patient was then eleven years old, she is now twelve. Three months ago, on examining the case, it was found that all the eight permanent molars were occluding perfectly, and the superior second bicuspids seemed to be making an effort to assume a normal position, and had forced a perceptible space between the first bicuspids and molars. A system of occasional wedging between the first bicuspids and molars was employed first with a piece of wedge wood, and subsequently with compressed pine. The improvement already accomplished is reported to be very great. The wedging had the effect of forcing the eight anterior teeth forward.

The patient now wears a vulcanite plate to expand the anterior teeth, and to give the delayed bicuspids room to erupt.

Literary Notices and Selections.

HYPEROSTOSIS OF ROOTS OF TEETH.

By Frank Abbott, M.D., New York, N.Y.

(*Concluded from p.* 92.)

At the point of junction of the enlarged roots I have met in several of my specimens with a peculiar formation of dentine, and, owing to the presence of a large number of vascular canals, I propose to term it vaso-dentine. To the naked eye, in the prepared specimen, is presented a high degree of transparency, which at once distinguishes it from the neighbouring opaque portions of normal dentine and from cementum. Low powers of the microscope reveal in this dentine a varying number of medullary canals, either in a parallel or plexiform arrangement. The canaliculi contain medullary tissue and capillary blood-vessels, one or two in each canal. Sometimes glistening granules of lime-salts are found, more especially in dilated portions of the canals. Offshoots of such canals may inosculate with very narrow canals, containing granular protoplasm only. The surrounding basis-substance is scantily supplied with extremly fine canaliculi, running, without any apparent regularity, either in fan-shaped groups or parallel with the medullary canals, or in the shape of a fountain, encircling the canals in the most beautiful and striking figures. Some portions of the basis-substance may look granular and devoid of canaliculi; others (and these form a vast majority) are apparently homogeneous, and scantily supplied with extremely minute canaliculi. The cementum is directly on the border of the vaso-dentine, without any intervening layer of granular dentine, and the cement-corpuscles nearest the dentine are in direct connection with the dentinal canaliculi themselves. Higher powers of the microscope brought to bear upon the vaso-dentine plainly show the medullary contents of the medullary canals, in which may also be seen one or two capillary blood-vessels. Both the canals and blood-vessels produce loops, as indicated by their abrupt terminations in vertical sections, and are unquestionably in communication with the blood-vessels of the pericementum (Tomes). A peculiar feature of the vaso-dentine is that portions freely supplied with vascular canals contain a considerably larger number of dentinal canaliculi than those devoid of vascular canals.

The canaliculi in the neighbourhood of the vascular canals are very irregular in their course, as before stated, and often loop-shaped, starting from and inosculating with the same vascular canal. Again, we find them starting from club, pear, spindle, and irregular-shaped spaces, containing medullary corpuscles, or granular protoplasm, but no blood-vessels. As an additional feature of hyperostosis of the roots, I would mention that in all my specimens the pulp-chamber and often the canals appear considerably narrowed by heavy formations of secondary dentine. Besides, the pulp-tissue was found to contain formations of secondary dentine known as pulp-stones, or crowded with globular calcareous depositions with no apparent structures. In the majority of the teeth the enamel also was imperfectly formed, it generally presenting a highly pigmented and imperfectly-calcified condition, with enamel-rods very irregular and curly.

A striking feature in all microscopical specimens of hyperplastic cementum is the great number and large size of the offshoots of the cement-corpuscles, the previously so-called canaliculi. The reason for this seems to be in the fact that both the corpuscles (lacunæ) and their coarser offshoots (canaliculi) are filled with air, or dirt from the grinding, which causes them to look black. If, however, we place a carefully but not completely decalcified portion of this tissue, mounted in glycerine, under a very high power, we are struck with its beautiful and graceful appearance. It is identical in structure with that of normal cementum. The basis-substance forms cavities that contain nucleated protoplasmic bodies, the cement-corpuscles proper of a markedly reticulated structure.

Between the periphery of the cement-corpuscles and that of the lacuna there is a narrow light rim, obviously corresponding to a space that serves for the circulation of the nutritive liquids. The lacuna at its periphery is interrupted by numerous offshoots, more irregular and wider than those of normal cementum. These canaliculi form an extremely delicate recticulum throughout the basis-substance, interconnecting the neighbouring lacunæ (indeed, all lacunæ) of the cementum.

Starting from the periphery of the cement-corpuscles, conical offshoots run into the canaliculi; the broader, of course, the wider the canaliculus. The coarsest offshoots still exhibit a reticular structure; whereas the finest are merely beaded threads occupying the middle of the canaliculi. Thus it will be seen that all canaliculi hold filaments of living-matter in a cobweb arrangement, and thus it becomes plain that hyperplastic as well as normal cementum is a living tissue throughout. The reticular structure of the living-matter in the corpuscle itself is plainly visible. The inert basis-substance, infiltrated at the same time with lime-salts, is located in the meshes of the reticulum of the canaliculi, and between the basis-substance and filaments of living-matter a slow circulation is going on, the liquid carrying nourishment and taking away the effete material. Thus it is that pathological changes of a pathological tissue become intelligible, and cementitis of hyperplastic cementum, as described and illustrated by Wedl, under the term "perforating resorption," is understood.

Microscopically I have already described this condition. Under the microscope it is characterised by the presence of cavities filled with medullary corpuscles, or multinuclear protoplasmic masses, and bounded towards the unchanged cementum with various bay-like excavations. The destination may involve only superficial portions of the tumour or the entire mass down to the cementum. There is slight tendency to suppurative cementitis, and reformation of cementum takes place during the absorption of the roots of the teeth—hence the bay-like excavations become filled with new bone.—*Dental Cosmos.*

The following Letters to the Editor of the DENTAL REVIEW *cannot fail to interest us.*

SOME OBSERVATIONS ON ENGLISH DENTAL APPLIANCES AND METHODS.

To the Editor of The Dental Review :

It is not the intention of the writer to enlarge upon subjects that are already as household words to the profession, but to note where advancement attains on this side, or note where possible improvements might be made. The laboratory is now considered by the progressionists (?) in the United States, and by the *elite* of the profession here, to be that part of the body politic of dentistry that should be eliminated from their association, and relegated to the tender mercies entirely of the "Mechanical Dentist" (U.S.) or "Workman" (English) ; for here, as well as in the United States, there are those who evince a desire to forget that to prosthetic dentistry, and to that alone, they owe their present preferment.

While the premium upon inventive genius is not as remunerative here as in the United States, I think in the dental profession it has little lack of appreciation to complain of.

Mechanical appliances for the laboratory of very much improved types are quite plenty, and very generally in use ; the English dentist, in this respect, being in no way behind his trans-atlantic brother in availing himself of anything that will facilitate his labour or improve the products of his laboratory. In many instances I am constrained to think that a clearer perception of the ends to be attained would subserve a better purpose than being surrounded with a multiplicity of appliances, the use of which is but partially understood by those to whose care their manipulation is entrusted.

For heating appliances, whether it be for reducing, soldering, vulcanising, or the thousand and one things about dentistry in which the application of heat plays such an important part, the manufacturers of this country surpass those of any other, as a glance through the catalogues will prove; Fletcher's name now being familiar to all the advanced corps of dentists in especial connection with this requirement of our profession.

Verrier, with his gas furnaces, has attained to considerable perfection, but they do not yet meet the requirements of the average dentist, the results often being of an irregular nature; so much so, that any one in an active practice, and making a speciality of fine work, would rather rely upon something of smaller dimensions, the use of which would produce less disturbance of their equanimity, and be more of an endorsement of their artistic ability.

I think the pressure vulcanisers, as used in the majority of laboratories, are very good. With their various automatic arrangements, vulcanising is rendered an operation that may result in a uniformity of realisation hardly to be attained even with the most costly apparatus.

It would take too long to describe the various bench tools; they are of infinite variety, and most of them well adapted to the purpose intended, and their quality is unexcelled. Metal plates are more largely used here than in the United States, and in this branch of our profession I think much more perfection is arrived at here than there, although I must say I have seen metal plates that were "fearfully and wonderfully" made, with clasps, bands, wires, etc., incidental in a certain degree to metal work. It is apparent that an excuse has been made to encumber cases in order to ensure their retention, which suggests at once an eye only for two objects, the retention of the plate, and the receipt of the fee.

The foregoing applies to many practitioners here, but I am pleased to note there are some who are really earnest in their endeavours to place dentistry upon a higher plane.

Modelling compounds arel argely used here for taking impressions; first, because they are easy to use; secondly, because the use of plaster is but little understood, especially is this the case in impressions for partial cases. I have never seen an impression of the above description taken during my sojourn here.

I have only partially gone into the mechanical aspect of the case, which I hope to complete in the next paper; after which I hope to be able to secure a little of your valuable space for a consideration of the operative side of the question.

London, England, *Sept.* 30, 1886. *"78."*

To the Editor of The Dental Review:

It gives me great pleasure to comply with your request, and the more so that I find, on my return to France, dentistry and dentists have decidedly and undoubtedly progressed. The spirit of education is here. There exist to-day two schools in Paris devoted to the interests of the dental profession. In both of these schools the student can get instruction in every department of our science. It would be too much to claim now, that practically he would gain as much as in one of our best American institutions, for these schools are young, and the demand of the French people does not call for as high a standard of practical education. In certain branches, no schools in the world give greater facilities than these for the attainment of the best education the student could desire. In anatomy, physiology, pathology, therapeutics, chemistry, materia medica, surgery, etc., the student has every advantage. In prosthetic dentistry, the French dentists are skilful to the point of giving the highest finish to their work; but in this department, as in operations on the natural teeth, the demand has not stimulated them to overcome the difficulties of adaptation; consequently, one sees many defects in artificial dentures.

In operative dentistry, from a scientific point of view, the French are in their infancy. In an old civilisation like this, it is a slow process to change the established order of things, and especially where it must be for a long period a pecuniary loss to the profession. There are many men in the dental profession in France capable of doing excellent work, but the impossibility of attending to from twenty to forty patients daily is an effectual bar to the exercise of one's best gifts.

The "fee system" of charges for professionial services is, undoubtedly, the reason why dentistry in this country has not, in the years past, attained a higher excellence. The operator who receives no greater fee for an operation requiring an hour for its performance in one way, which could be completed in fifteen minutes if done in another way—especially when he has fifteen patients awaiting his services in the reception-room—is not likely to give the patient in hand the benefit of the longer time and greater excellence; and he is not to be held responsible entirely for this: the patient, in the majority of cases, asks no more, expects no more, in point of fact, decidedly objects to more.

This condition of things can only be revolutionised by education—first of the dentist, second of the people; and the first step was taken in 1880, when the Dental School and Hospital of Paris was founded by public subscriptions and a subvention from the city of Paris. The course requires three years, upon the completion of which the graduate receives the diploma of the dental school (Diplôme de l' Ecole Dentaire de Paris. D. E. D. P.).

Dr. M. M. Levett, an American dentist, occupies the chair of operative dentistry. It must take years, as a matter of course, before the effect of this school will reach the people; but it is sure to come. At another time I shall give you something regarding the other dental school, which is also to play an important part in the progress of the dental art in France.

G. C. DABOLL, M.D.S.

Paris, France.

To the Editor of The Dental Review:

DEAR SIR,—It is with much pleasure that I comply with your wish in giving expression to my views in regard to dentists and the dental profession of America. As you are aware, my journey to the United States was made for the purpose of extending a knowledge of my method of filling teeth among your dentists, and at the same time also to prove that there are dentists in other lands who not only have taken ample advantage of American improvements, but who themselves have taken steps of advancement.

Any one visiting Europe ten or fifteen years ago would have been astonished at the exceedingly imperfect development of the science of dentistry. The mechanical and operative branches of dentistry were not taught in the Universities, and hence had to be acquired in private offices; and it is for this reason that a dentist who has passed his examination according to the laws of his own country, lacked very much indeed in that practical knowledge which one possessed who had attended but six months at some dental college in the United States.

This is now changed, however, as the German, French, English, Scandinavian, and other Governments have established dental departments in their Universities, in which the practical branches are very thoroughly considered. We are taking advantage of of the experience of Americans in educational systems, and upon this excellent foundation propose to advance. In a few years we hope to be able to cope with Americans in every field and particular; and, in so far as my acquaintance with you extends, I am satisfied that you will rejoice with us, and continue to aid in perfecting our speciality.

Aside from the extraordinary skill and ability with which so many of the American dentists are endowed, I was astonished by the critical manner in which my method was examined, and the impartial fairness with which judgment was passed upon it.

I departed from your shores with the most pleasant impressions, and to me, the days which I passed among you were days of joy and pleasure long to be remembered.

Yours very truly,
W. HERBST.

Bremen, Germany, *October* 6, 1886.

DENTISTRY NOT A SPECIALTY IN MEDICINE.*

By NORMAN W. KINGSLEY, D.D.S.

WHEN I received the invitation from your committee to be present on this occasion, I said, involuntarily, from a force of habit—no. But the compliment paid me in the invitation, together with the flattering reception accorded me in Boston on a former occasion, made me hesitate in sending a negative reply.

When I have something to say a little out of the ordinary practical and scientific talk of dental societies, I like to come to Boston with it. The old fancy that wisdom was born in the East, and spreads from that point of the compass, induces me to seek this locality and take advantage of the myth. As my professional audience, other than that now before me, lies to the west of us, my words may possibly gain a factitious importance by being delivered in Boston. I realise in advance that some things I am about to say will not be accepted, and are liable to be severely criticised.

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* Annual Address before the New England Dental Society, and reported in *Independent Practitioner*.

I have, for some years, been drifting in a conflict of opinion upon a subject of universal interest to us, until a period of positive conviction has arrived, and in my present discourse I shall present my reasons for believing that dentistry is not a specialty of medicine. Such an assertion requires some boldness, in view of the prevalence of a contrary opinion, associated as it has been with the idea that, in some indefinite sort of way, to be regarded as specialists in medicine gives us character and dignity, and invests us with the right to be called scientists. This desire to be considered medical specialists has its foundation in a notion that dentistry, pure and simple, is ignoble, to practise it degrading, and that, to stand well in society, we must resolve that we are not dentists, but medical doctors practising a specialty. It has also been stimulated by that spirit of contrariness which inspires children to cry for that which is denied them ; and, as the medical profession, as a whole, have denied that dentistry is a specialty of medicine and is only a mechanical trade, dentists have got very much in the habit of denying that dentistry is a mechanical trade, and on all occasions asserting and reasserting that they belong to the great medical fraternity. That they do sometimes prescribe medical remedies, apply leeches and cut gumboils, is true, but there is not an old housewife in the country who is not more of a medical doctor and better capable of treating the diseases of the family than the majority of dentists, even if they have the medical degree.

Asserting that we are medical practitioners does not make us so, any more than the three Tailors of Tooley Street became the “ People of England ” when they met in solemn conclave and passed their famous resolution to that effect. One is reminded of the old fable of the ass with a lion’s skin. The skin was the skin of a lion, but the bray was that of an ass.

All this betrays upon the face of it a consciousness of demerit—a consciousness that they are claiming what they are not entitled to, on the Jew principle of asking more for a thing than it is worth and accepting what can be obtained.

The assertion of the medical fraternity that dentistry is only a mechanical trade because dentists make artificial teeth, is no wider of the mark than the claim of some dentists that, because they can stop a local ache or wrestle with pyorrhœa alveolaris, they are thus constituted specialists in medicine.

The true status of dentistry is distinctly separated from either of these incongruous claims. Now, that there may be no ambiguity of terms, let me say, before going further, that by dentistry I mean to include every branch and department known under that name, and a dentist, in the full sense of the term, in the present stage of the art, is one who understands and can practise each and every specialty of it. The American Dental Association, as is well known, is divided up into seven or eight sections. I was recently called upon to declare to which section I wished to attach myself. My reply was: "To no *section;* I am not the eight part of a dentist, to which seven other parts must be added to make a whole."

In passing, I wish to remark that the sectional plan, copied after the American Medical Association, is not suited to our condition. Whatever may be the result in the Medical Association, I am confident that all the members of our National Association would return from its meetings with more benefit if the sections were abolished.

I take pride in being a dentist in the full sense of the term. No man ever applied to me for a service that came within the range of dentistry, to whom I was obliged to say, "That is not my specialty; I shall have to send you to some one else."

A dentist may be an oral surgeon, but an oral surgeon is not a dentist. A dentist may be an excellent anatomist, physiologist, chemist, microscopist, artist or mechanic, but neither one of these practised to perfection makes him a dentist.

I desire to make the distinction very marked. Oral surgery, which is an almost infinitesimal part of dentistry (as dentistry is practised daily the world over), is unquestionably a specialty or department of general medicine. But dentists who affect oral surgery, or who occasionally perform some trifling operation, have not much more claim to be called surgeons than has the old farmer who opens a boil for one of his labourers to let out the core. Oral surgery, as practised by dentists, is only a very small but not unimportant specialty of dentistry; it occupies the debatable ground between dental and general surgery, but as an essential department of practical dentistry, its importance has been magnified by those practitioners who are more skilled in surgery than they are in dentistry.

I am, therefore, prepare to affirm that dentistry is not a specialty of any other science or art, but is a profession in itself, as separate and distinct from all other, as any other calling or vocation is distinct from every other.

Dentists are very much in the habit of speaking of their occupation in one and the same breath, as a "profession" an as a "specialty," but I doubt very much if many of them could give any good reason why it should be called a profession. They use the term because it sounds well, is a little higher-toned, and carries a degree of importance with it.

But dentistry is a profession. It is a profession because it is a vocation of beneficence. This is so patent that I need not attempt to prove it, or enlarge upon it: Millions are on the earth to-day who call us blessed because of the comfort we have given them and the benefit they have derived from us

Dentistry is a profession by universal acknowledgment All things in this world, physical, political, social and moral, by the law of equilibrium very soon find their own level. A man in his egotism, conceit and vanity, may assert this or that of himself, but, whatever it may be, the great common sense of the "plain people" (as Mr. Lincoln fondly called them) puts him in his true place.

Dentistry has been an organised science for more than a generation, and has been called a "Profession" by universal consent by the cultured and uncultured, as well as by its own practitioners. Even the highest authorities in medical literature refer to dentistry, not as the "Dental Specialty of Medicine," but as a "Profession." That most distinguished of medical authors, the late Prof. Frank H. Hamilton, in a letter to the Odontological Society of New York, written last February, said:

"To Americans, by almost universal consent, is given the chief credit of having brought dentistry from a simple mechanical art to the rank of a science, and of having established for itself a just claim to the title of a 'Learned Profession.'"

Your own beloved Holmes, distinguished alike as an author and a savant—one who does not use the English language recklessly or without meaning—sent to the same society last winter this toast:

"'The Dental Profession and this Association as its worthy representative.'" It has established and prolonged the reign of beauty; it has added to the charms of social intercourse and lent perfection to the accents of eloquence; it has taken from old age its most unwelcome feature and lengthened enjoyable human life far beyond the limit of the years when the toothless and purblind patriarch might exclaim, 'I have no pleasure in them.'"

This designation of it as a "profession" is not an assumption like that of the barber, the dancing master, or the itinerant phrenologist: it is entitled to this distinction because the mastery of it as a science or an art involves a considerable knowledge of many other sciences. Its resources are not only nearly all the sciences, but, in an equal degree, nearly all the arts. Hardly an art, from plumbing to sculpture, but has its prototype in some branch of dentistry, and yet it is not a departmene or specialty of any one of them.

Suppose that in some kind of manufacture in which I might be engaged I was using strips of iron punched full of holes, and wanted a machine to make them. Such a machine could be made by a combination of well-known movements; for example, a treadle and driving wheel borrowed from a foot lathe; the movement of the punch from a sewing machine, and the feeding apparatus from a sawmill. Such a machine would be distinctly a new machine, and patentable as such, although deriving all its principles from old sources. It would not be an improvement on a foot lathe, nor on a sewing machine, nor again on a saw-mill. The new combination and new application of old principles would make it an entirely new machine. It is so with dentistry.

While many of its processes are mainly of a mechanical nature, it is not a mechanical trade, inasmuch as a mechanical trade is governed by fixed rules and a routine of labour, in which each workman is a servile imitator of the pattern given him, and can become master of his trade without any knowledge beyond its details. His brain is not constantly called upon to apply established principles to entirely new conditions and surrounding circumstances. The distinction which I would make between a trade and a profession is that, while the latter may employ the identical methods of the former, the judgment and the inventive faculties of the practitioner must be in active exercise to apply those principles and those methods to constantly varying conditions.

The predominating feature and characteristic of dentistry, that which removes it farther than all else combined from medicine, is the mechinacal character of its methods. We might as well try to blot out the inevitable laws of this universe as to ignore this great fact: dentistry, as a profession, has for its corner-stone and its entire foundation mechanics applied by a knowledge of the various sciences. So much alike are the methods of the gold and silver jeweller to dentistry, that the acquirement of one would be a partial education for the other ; yet making gold and silver jewelry is not a profession ; it is a trade. Dentistry, while using the same mechanical processes, is obliged to add invention in their application to every case.

The methods of the painter and sculptor are the methods of the mechanic. But portrait, figure and landscape painting and sculpture are branches of fine art, and the vocation is a profession, not a trade. Figure painting and sculpture, particularly, require a better knowledge of general anatomy than dentistry does ; but who ever heard a sculptor assert that he was for that reason "a specialist in medicine"? Michael Angelo's distinction and pre-eminence as the master artist of the world was due to his anatomical knowledge ; and Sir Charles Bell made a science for artists in his "Anatomy and Physiology of Expression."

Blot mechanics from dentistry, and you might as well blot the sun from our terrestrial universe ; chaos irredeemable follows.

A few dilettanti may confine themselves to operations on the natural teeth, and scout with indignation the idea that they are mechanics, but every step of the operation in filling a tooth is purely mechanical. It requires nice skill to be sure, but the skill is mechanical. That which dignifies it, bringing it above ordinary mechanics, is the fact it is performed upon living organisms, and that which makes the operation professional is the knowledge of anatomy, pathology, etc., which discriminates in directing the mechanical treatment.

We must form our judgment of dentistry as it is to-day, in the year of grace 1886, and not as it may be in some utopian future, when the race shall have become so far advanced in the knowledge and application of hygienic principles, and all transmitted tendencies to deterioration have been stamped out, that teeth no longer need repair. Statistics of dentistry throughout the world to-day would undoubtedly show that three-fourths of the combined aggregate income of the profession is derived from the exercise of mechanical skill, pure and simple, and that I believe without counting operative dentistry as a mechanical performance.

Dentistry is not a specialty of medicine, because its chief and predominating characteristics are utterly unlike anything which is taught in medicine, requiring for their successful performance natural faculties and acquirements that are entirely distinct from the practice of medicine.

Dentistry may be said to be more nearly allied to medicine than to any other vocation, but an analysis may even question that. Laying aside, for the sake of the argument, what we consider as the unprofessional character of exhibitions of dental workmanship, and also the fact that such work is prosthetic in its intent, would we not be quite justified in making contributions to an industrial exhibition which was confined to works of art, including all objects of art in gold, silver, and porcelain? Where are there any finer specimens of the art of gold working than some of the so-called bridge-work of recent times?

In passing, I cannot refrain from paying a tribute to such work shown by Dr. J. Rollo Knapp, of New Orleans, at the last meeting of the American Dental Association. They were brilliant mechanical achievements, and ought to make men, who have been trying to cut off mechanics from dentistry, hide their heads with shame. Men who can fill a tooth and nothing more, who could not execute such a piece of prosthetic dentistry to save their lives, assume an air of superiority, and prate about relegating the mechanics of dentistry to the shop and to mere mechanics. Wipe out of dentistry everything belonging to mechanics, and you will have taken away all the brains, and cut the head off close to the tail.

If all the workers in metals, gold, silver, brass, iron or steel—if all the workers in wood, carvers, cabinet-makers, and builders—if all the workers in pottery, moulders, porcelain-makers, and decorators, together with all the artists, painters, and sculptors, were suddenly and simultaneously destroyed by some strange cataclysm or epidemic, those arts would not be lost; for in the ranks of the dentists could be found skilled experts in every one of them, and this comprehensive combination of natural faculties and acquirements is not to count against them, for if in the same grand catastrophe all the scientists of certain classes were carried off, the same sciences could be fully taught by dentists.

In the daily practice of dentistry can be found anatomists, physiologists, pathologists, histologists, biologists, microscopists, chemists, botanists, geologists, and metallurgists.

Where, in all the wide range of human employments, is there another vocation—no matter whether you call it a profession or a trade—of which such a statement can be made?

(*To be continued.*)

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE following is a list of the members of the Council, for the year 1887 :—

President : Charles S. Tomes, F.R.S.

Vice-Presidents (resident) : Henry Sewill, S. J. Hutchinson, J. H. Mummery. Non-resident : Andrew Wilson (Edinburgh), Richard Rogers (Cheltenham), G. C. McAdam (Hereford).

Treasurer : James Parkinson.

Librarian : Felix Weiss.

Curator : Storer Bennett.

Editor of the Transactions : Frederick Canton.

Honorary Secretaries : R. H. Woodhouse (Council), Willoughby Weiss (Society), C. J. Boyd Wallis (for foreign correspondence).

Councillors (resident) : Morton A. Smale, Arthur S. Underwood, E. G. Betts, J. F. Corbett, Thomas Arnold Rogers, Sir Edwin Saunders, John Fairbank, David Hepburn, Ashley W. Barrett. Non-resident : J. R. Brownlie (Glasgow), J. H. Whatford (Eastbourne), F. H. Balkwill (Plymouth), George Brunton (Leeds), E. Apperley (Stroud), J. H. Redman (Brighton).

HOSPITAL REPORT.

MONTHLY STATEMENT of operations performed at the Birmingham Dental Hospital, from Dec. 1 to Dec. 31, 1886 :—

Number of Patients attended ...		679
Extractions	Children under 14 ... ... Adults	512
	Under Nitrous Oxide, and Ether, and Chloroform	21
Gold Stoppings...		4
Other Stoppings		48
Advice and Scaling		73
Irregularities of the Teeth		9
Miscellaneous		45
Total		1392

British Journal of Dental Science.

No. 458. LONDON, FEB. 15, 1887. Vol. XXX

VALEDICTORY ADDRESS.*

By T. Charters White, M.R.C.S., L.D.S., *Retiring President of the Odontological Society of Great Britain.*

Gentlemen,

Time, with silent but ceaseless steps, has brought us to the close of another year of this Society's existence, and with it has brought the surrender of the honour and dignity you conferred upon me at its opening. I need not say how gratified I have felt in being allowed to serve you in the capacity of your President—a gratification which will be a pleasant remembrance to me to the end of my days, and for which I thank you.

Although the year has not been marked by any startling novelties in Dental Surgery, yet, upon the whole, there have been encouraging signs that the study of dental diseases and their treatment is still being pursued with that careful attention which must ultimately tend to the alleviation of those peculiar sufferings which claim our aid.

A most valuable paper was contributed by Dr. Dudley Buxton, on "The Physiological Action of Nitrous Oxide," which every practitioner of our specialty would do well to master. It is a great advantage to be able to administer this beneficent agent successfully by the light of careful observation and practised skill; but the administrator will be the more assured in his administration by bearing in mind the physiological effects he is inducing in his patient; this knowledge gives him greater confidence and ease, and the reflection of this is seen in the increased confidence and ease manifested in the faces and minds of anxious onlookers—a no slight benefit to all—patient, friends, and operator. We had hoped that Dr. Buxton would have been able to have given us the conclusion of his most valuable and instructive paper, but, owing to his numerous engagements, that pleasure, which we should have enjoyed, has to be deferred. We, however, thank him heartily for what he did give us, and we can only hope that at some future time he may be able to complete what he has so far contributed to our knowledge of the action of this now indispensable addition to Dental Therapeutics.

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* Delivered before the Odontological Society of Great Britain Jan., 1887.

Mr. J. Bland Sutton, to whom we have often been indebted for valuable papers, furnished one of great interest on "Dental and Oral Cases in Animals;" and coming from one who may be considered *facile princeps* in Comparative Pathology, his paper was, as might have been expected, full of information; the marked attention paid to it by those present testified to the interest felt by all in the cases he introduced to their notice. Such papers as these, although not coming absolutely within the scope of our daily practice, are nevertheless valuable as collateral adjuncts to our general knowledge, and are not to be neglected, for, as Solomon says, "men run to and fro in the earth, and knowledge increaseth." We live in an age of great mental activity, when the omnivorous reading public amongst the leisured classes read nearly everything, and not read only, but think on what they read; and as many of our patients come from that class, we ought to be prepared to give an answer to the intelligent questions that are oftentimes put to us by them. Therefore such papers as those furnished for us by Mr. J. Bland Sutton are of peculiar value, and we will hope that he may upon many occasions give us something from his well-filled storehouse of Comparative Pathology.

Histology, although not a branch of study absolutely required by the dental practitioner, is one which should engage the attention of the accomplished student, and which he can scarcely do without. There will be in the course of his practice many occasions when he may desire to investigate abnormalities in teeth or in other parts of the oral cavity, and to make himself familiar with their histological characters is a great gain in assisting his future diagnosis. We have to thank Mr. J. W. Groves for a considerable addition to our knowledge of histological manipulation by the valuable paper he contributed, and which I regret to say a serious illness prevented my hearing. To demonstrate the histological elements of even a simple membrane is not easy without a knowledge of the actions set up by different reagents and staining fluids suitable for this purpose. But such a paper as that given by Mr. Groves provides in a nutshell all the knowledge a busy practitioner need employ; and becoming familiar with the microscopical aspects of normal histology, he will the more readily detect pathological departures from this standard. Staining fluids have added new powers to microscopical research, and bring out the hidden elements of a tissue which otherwise would be lost to view, or only seen with difficulty. It was to direct attention to this valuable aid in histological pursuits that Mr. Groves' paper was directed, with that clearness which comes of close familiarity with the intimate working of this subject.

Mr. Wm. Storer Bennett, in a short paper, called our attention to the recent additions to the Museum. Under the endeavours of our former and present Curators we have become possessed of many valuable dental specimens, some of which may be considered unique, and under Mr. Bennett's care no chance will be overlooked which will result in enriching our collection and rendering it of still greater service in the furtherance of dental study. Some few of the recent additions are before you for examination this evening.

I know of no more fascinating study than that which peers into the obscurity of past ages, when the curtain of antiquity has long since fallen on the drama of that life enacted on the stage of man's earliest existence. It is a study so immense that it would not be possible, even if within our province, to call attention to each and every incident which helped to make up the sum of the daily life of that remote period; but, by the courtesy of my friend Mr. Wm. Cunnington, I was enabled to present to your notice a number of fragments of human maxillæ possessing great interest as relics of the "Stone Age"—that far distant period in the past, before metal of any kind was introduced into use in Britain, and which archæologists state cannot be less, but may be considerably more, than four thousand years ago.

The jaws were massive in shape, the bone dense in structure, while the teeth presented every variety of erosion of the masticating surfaces, being worn away into deep pits in many instances. Only one case of dental caries occurred, but in one or two of the lower jaws the teeth were thickly coated with tartar. I made a rough microscopical analysis of this tartar, which I offered as my contribution that evening; it having struck me that as the salivary calculus which coats our teeth imprisons in its concrete any stray particles of food embedded in it, so this tartar of the stone age might present similar particles of food of that early period, and we might get some glimpse of the character of the aliment partaken of by these prehistoric men. Dissolving some small fragments of this tartar in weak hydrochloric acid and water, I decalcified it, and carefully washing and collecting the sediment, I found the following organic remains of food: husks of corn, hairs from the outside of the husks, spiral vessels from vegetables, husks of starch, the cell contents destroyed, the point of a fish's tooth, some round ruby-coloured bodies unknown to me, a conglomeration of oval cells, probably of fruit, the barblets of down, and portions of wool. The general mass of the tartar was made up of an amorphous mass of what might be disintegrated epithelium. In addition to these, this amorphous material contained a large quantity of sandy particles, of two characters—one polarising and relating to quartz, the other not polarising and evidently flinty. The erosion of the masticating surfaces of the teeth was doubtless due to the grinding of these particles between them in the act of eating. More recent examinations have revealed cartilaginous plates, the individual cells of which became easily detachable in numbers from the original piece.*

Although the papers contributed to the Society during the past year have not been more numerous than is usually the case, we have had several interesting and instructive Casual Communications to fill their places; consequently this dearth may not be altogether regretted, but must be expected from time to time: for a paper suitable to be presented to such a Society as this, should be the outcome of many years' study and observation, well thought out, and every thesis proved; therefore, under such circumstances, such papers cannot be of frequent occurrence. It may be possible to bring papers before the Society full of crude suggestions, hasty generalisations, and ingenious but intangible hypotheses, the main mission of which would be to stop a gap; but they would be hardly acceptable to such a critical audience as that constituting the meetings of this Society. On the other hand, Casual Communications are always welcome, inasmuch as they oftentimes contain the germ of some practical application, which, being fertilised by discussion, becomes elaborated at the hands of other practitioners, and made available for the benefit of all; whilst a paper to which a man has been giving undivided attention for years, and which he has made a personal and special study, however valuable and instructive it may be, is incapable of being discussed, because it surmounts the attainments of his audience in that particular direction, and they, failing to grasp the subject in all its fulness, a few questions are asked, and then it is finished by a vote of thanks to the reader for his valuable paper. Far be it from my wish or intention to speak disparagingly of papers on selected subjects; but those papers can only come before us, if from out of our midst, by being taken up by those of our younger brethren who, possessing, or being supposed to possess, the requisite leisure, will devote their intellectual energies to working out some of the many subjects cognate to our specialty which may afford them an attractive field.

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* I have now reason to believe that the diatoms mentioned in my paper were accidentally introduced, but the presence of all the other constituents named has been verified by further examinations and by independent observers.

One feature of the events of the past year cannot be omitted from my necessarily brief summary, and that is the extreme pleasure we derived in holding out the warm hand of welcome to our provincial brethren, upon the recent meeting of the British Dental Association in London. It adds to our pleasure to know that our *conversazione* was thoroughly enjoyed by all those present; for by its means mutual friendships were strengthened, and personal acquaintance made with many whose names and work in the provinces were previously known to us only by that good reputation which had winged its way before them. Who can thoroughly estimate the effects of those encouraging confidences exchanged upon this occasion—the mutual confession of difficulties presented and overcome; many a young heart meeting with sympathy from those who have gone before them in making a practice, having borne the burden and heat of the day! We cannot thoroughly estimate the full effect of the words of encouragement passed on that occasion, but they will bear their fruit in the warm allegiance our provincial brethren will always feel towards this, the parent Society of the profession.

Our beloved Sovereign, who, throughout her happy and prosperous reign, has always encouraged and recognised worth under whatever guise it may have been presented to her notice, has during this year added another honour to our profession, in dignifying one whom we have all looked up to and reverenced as our leader in every movement which had for its object the advancement of our specialty—one whose literary and scientific achievements have been warmly appreciated by all who value and admire the thoroughness which characterises his labours, from whose first work may be dated our elevation as a special branch of surgery, and whom we hope may be long spared to us to guide us with his counsel and encourage us with his approbation. I need not say that I allude to Sir John Tomes, for no man can fail to recognise to whom these remarks justly apply.

Now, gentlemen, I reluctantly bring my year of office to its close; but before doing so let me use this opportunity of publicly thanking those officers of the Society upon whose shoulders the great labour and responsibility of managing its affairs have fallen. It might seem invidious to mention them personally by name, therefore I will thank them in their corporate capacity for all they have done, during my Presidential occupation of this chair, to lighten my burden and smooth my path ; and I feel I can in all justice assure you, that while we have such men to serve us, our Society will never fall from the high and influential position it has attained.

CASUAL COMMUNICATIONS.*

Dr. Walker read the following Casual Communication : —

" Mr. President,—Since the discussion on Mr. Cunningham's method of coating vulcanite dentures with pure gold, I have prepared four dentures for four patients whose mucous membrane was very much congested, and the epithelium of the slightest character. I have seen each of these patients since introducing the dentures, and one and all inform me no heat has been generated in wearing the dentures ; and on examination after a month's wear I can detect no line of congestion at the edges of the dentures."

" The object of depositing gold on vulcanite is to avoid congestion arising at the necks of teeth, and so prevent as much as possible the teeth becoming denuded of the gum and periosteum.

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* Contributed to the Odontological Society of Great Britain.

"On examining these dentures after a month's wear, I found no disposition of the gold to peel; in fact, the dentures appeared as if they had only just been introduced.

"I have brought you nine specimens to illustrate the process,—attached to each specimen are written particulars,—and I have also brought a Bunsen's battery to show the members the size and strength of battery that I find most successful.

"Although it is possible, as stated by Mr. Cunningham, to obtain a continuous surface of gold by direct deposition on the filings, this is facilitated by coating the surface of the plate with plumbago before submitting it to the action of the battery. The deposition of gold is also accelerated if the surface of the denture is first coated by means of the battery with a thin film of silver or copper, as seen in some of the specimens exhibited.

"These specimens have been prepared in my own workroom, under the supervision of Mr. Cunningham, to whom I feel much indebted for an immense stride of advance in vulcanite work.

"If there is any member present who would like to see the action of the battery, I shall be pleased to remain after the meeting for the purpose of putting it in action."

Dr. Walker then handed round the following specimens:—

No. 1. Black vulcanite denture, coated with pink. Anchorage of gold filings; film of gold and copper deposited by Bunsen's battery, with plumbago.

No. 2. Black vulcanite denture. Anchorage of gold filings; surface burnished with plumbago.

No. 3. Black rubber denture. Anchorage of gold filings; surface of model powdered with plumbago before vulcanising. After vulcanising, pure gold deposited by Bunsen's battery.

No. 4. Ash's brown rubber denture. Anchorage of gold filings; a film of pure silver deposited by Bunsen's battery; pure gold deposited by Bunsen's battery.

No. 5. Black rubber denture. Teeth mounted with gold tongues. Anchorage of gold filings; models powdered with plumbago before vulcanising; film of silver deposited by Bunsen's battery; gold deposited by Bunsen's battery.

No. 6. Teeth set up, packed with Ash's pink rubber, and sprinkled with gold filings on female matrix.

No. 7. Upper model sprinkled with gold filings.
No. 8. Teeth set up, packed with black rubber; gold filings sprinkled on female matrix.
No. 9. Model powdered with plumbago, and burnished ready for coat of gold filings.

The President thanked Dr. Walker for the trouble he had taken in preparing the specimens and exhibiting them. A great deal had been said from time to time about the poisonous effects of vulcanite, but, as he believed, with very little foundation of fact. The bad state of the mouth sometimes met with in patients wearing dentures was due, he thought, not to the plates themselves, but to the carelessness and want of cleanliness of the patient. Still, this ingenious process of gilding would prevent all possibility of the alleged poisonous effects, and would serve to relieve the fears and remove the prejudices of a certain class of patients.

Mr. Moore thought that the point to be first discussed was whether pure rubber could produce any prejudicial effect in the mouth.

Mr. Vanderpant (Kingston) inquired whether the addition of the deposit of gold at all affected the power of suction; and also whether, if gilding one surface of the denture was an improvement, it would not be a greater gain to gild both?

Mr. Stocken remarked that vulcanite dentures were not the only ones which were liable to cause an unhealthy condition of mouth in certain individuals. Some years ago, he made a denture of the best quality of dental alloy for a lady patient. After wearing it a short time, she came complaining of the state of her mouth, and on examination he found the mucous membrane covered by the plate studded with minute ulcers; it should be stated that the plate was an excellent fit. Mr. Stocken then made the patient a set in vulcanite, and the soreness at once disappeared and did not recur. The patient informed him that a small plate made of dental alloy which had been made for her some years previously, had produced precisely similar effects.

Mr. Redman said he had occasionally met with cases in which bad effects had been produced by the wearing of rubber dentures, but the evil was not due to any poison in the rubber, but simply to the fact that it was a bad conductor of heat. He instanced the case of a lady for whom he made a denture in red rubber; after some weeks, ulceration of the mucous membrane over the palate appeared, and resisted all sorts of treatment. At last he substituted a gold plate for the vulcanite, and the ulceration was soon cured.

Mr. Henry Weiss remarked that in some cases where there was extreme tenderness of the gums, but without actual ulceration, he had effected a cure by lining that part of the plate with gutta-percha.

Dr. Walker replied that the plate could be coated on both sides if thought desirable, but of course this added to the weight, and there was nothing gained by it; all that was really necessary was to coat the surface which was in contact with the mucous membrane. There could be no doubt that the explanation given by Mr. Redman of the cause of the bad effects of rubber plates was the correct one. Many patients only inserted their dentures when actually required for use, because, as they said, they were so much cooler without them. Gold did not produce the same result, because it was a much better conductor of heat. He had, of course, met with many cases similar to that related by Mr. Redman. One patient who had worn a black rubber denture for three months only came to him with no less than five ulcers which had obstinately resisted surgical treatment. A gold plate was made and fitted, and the ulcers were at once and permanently cured.

Dr. St. George Elliott said the Society had done a great deal of good scientific work, but he was not quite sure whether the practical work of the profession had always received a due share of attention. One of the avowed objects of the Society was to cultivate social intercourse amongst its members. Now there was nothing which would combine the social and practical so well as a clinic. Proposals for the holding of clinics had been made by members of the Society, but, no doubt for good and sufficient reasons, the Council had not favoured them. He suggested, therefore, that the members individually should take up the matter. He wished to say that he should be glad to see any of the members at his house at 5 p.m. on the following day, when M. Rosenthal, of Liège, would exhibit a contrivance of his own for washing out the sac of an alveolar abscess. And further, that he should be glad to welcome any of the members who would come on Monday, February 7th, the day of the next meeting of the Society, at 2 P.M., when he hoped to have two chairs occupied, and something worth seeing shown in each of them. He hoped to be able to make similar arrangements for the subsequent (March) meeting, but of this he would give further notice.

Mr. S. J. Hutchinson called attention to the following simple method of correcting an otherwise incurable irregularity :—

A lady, aged twenty-five, came to him with an upper lateral much misplaced. She had worn five plates, but without any good result, and on examination Mr. Hutchinson found that this was owing to the faulty direction of the root. He, therefore, fitted a gold collar round the tooth, secured it with "osteo" cement, and soldered an artificial lateral to this in its proper position. It might, perhaps, be asserted that the collar would work loose, and that the lateral would decay ; but he did not think that, with ordinary care and cleanliness, this would occur. Of course, the work should be inspected from time to time, and the osteo lining renewed when necessary.

The President remarked on the ingenuity of the arrangement.

Mr. Morton Smale then read the following communication on the subject of Cocaine :—

"Mr. President and Gentlemen,—I feel a certain hesitation about introducing the subject of Cocaine before you to-night, and would not venture to do so, did I not think that the subject was one fraught with much importance to our profession. The profession, as a whole, are in a condition of suspended judgment on the matter, and it is time all suspense was removed.

"The best way, it appears to me, to bring about so desirable a result, is, that some authoritative utterance should go forth from this Society as to the value and use of the drug. As a Society, we owe this to our profession. Surely no better service can be rendered the members of it, and of the profession at large, than to investigate scientifically and put forth the result of our experience as an authoritative declaration on any discovery or new method of practice that may be introduced.

"It appears to be good when committees are formed for such purposes. One consisting of careful investigators might with advantage be formed for this purpose. Cocaine is before the public, and it behoves us to be ready, with no uncertain voice, to express an opinion upon it.

"Messrs. Hunt, Wallis, Brunton, and others have already done more than enough to prove there is 'something in it' in relation to dentistry. We owe the former of these gentle men a great debt of gratitude for introducing the injection of cocaine into the gum tissues. I began using it (cocaine) in 1884, and since then have never been without it. In the Westminster Hospital Report for 1885, published early in 1886, I thus speak of it:—

"'Its main uses are as follows:—

"'In extraction, if the drug is applied to the gums surrounding the tooth (the part having first been dried and protected from the saliva, or the cocaine will be washed away), the pain attending the adjustment of the forceps is obviated, but the wrench attending the fracture of the outer wall of the alveolus, and rupture of vessels and nerves at the apical foramen, is much the same. A small loose stump may be removed almost painlessly.

"'In cases of fractured teeth, where it is necessary to remove the pulp, cocaine is also useful. Applied to the surface of the exposed pulp, it will deaden the sensibility, and if applied several times at short intervals, the nerve-extractor can be passed up the tooth, and the pulp extracted at once with very little pain. Cocaine is more effectual than anything else in these cases.

"'In cases of odontalgia, when the pain is due to exposed pulp, caused by caries, it is not better than carbolic acid.

"'In cases of periodontitis, when the tooth is painful on percussion, and feels too long, it is useless; counter-irritation is much more effectual.

"'This drug is of distinct value in practice, and should be in every dentist's consulting-room.'

"But the introduction of the hypodermic use of it has caused me to alter or enlarge very materially my view and use of it, and I consider it has a great future before it.

"For some time I have been using solutions of hydrochlorate of cocaine of various strengths—5 per cent., 10 per cent., 15 per cent., 20 per cent., 25 per cent. solutions—and with most satisfactory results; but the weaker ones I have discarded, and now use the three stronger ones.

"Of the cocaine faintness, etc., I have seen and heard very little, except in the journals. In a casual communication of this kind I can hardly quote cases at length, but I will mention a few of the cases in which I have found it useful:—Extractions, torsion, removal of live pulp, inserting a hickory wedge between teeth in plugging, when filling teeth after rapid separation (Dr. Bogue's separators, I believe, could be used with impunity, but I have not yet tried them); and all of these almost painlessly—at any rate, with such little pain that it was easily endurable. In the cases of removal of pulps, I have always applied it to the pulp itself also. A few days since I tried it applied in both ways, in a patient who had some exquisitely sensitive cavities at the neck on the buccal surface of some molars and bicuspids ; but the result did not come up to my expectation ; the patient said he certainly felt less pain, but that they were still painful.

"To-day I injected five minims of a 20 per cent. solution into my own gum, and five minutes afterwards I drove a hickory wedge in between my front teeth with a hand mallet, driving the wedge up against the gum as hard as I could. There was sufficient space between the teeth for plugging purposes, yet this, which appears to be one of the most painful operations in dentistry, was performed with little or no discomfort.

"I hope too much has not been said that it has wearied, and yet enough to justify me in asking for a committee of investigation."

Dr. Walker said he quite agreed with Mr. Smale as to the desirability of appointing a committee to investigate the action of Cocaine, and should be very pleased to second the proposition.

The President thought that the matter had better be left for the consideration of the Council. It would be impossible for a large meeting such as the present to decide upon the scope of the inquiry, or to form a satisfactory committee. If the Council had reason to think that such an inquiry was generally desired by the members, it would at once make the necessary arrangements.

Mr. Vanderpant showed two geminated bicuspids which he had extracted from the mouth of a lady aged thirty-two.

The President remarked that it was a very interesting specimen, but he should rather describe it as a case of osseous union between the roots than as one of true gemination.

Mr. W. Weiss said there was a specimen in the Museum in which there were three bicuspids, two of them being geminated. Was one of these a supernumerary?

Mr. Vanderpant replied in the negative. He agreed that the President's description of the specimen was the correct one.

Mr. Redman exhibited a model of the lower jaw of a lady aged forty-eight, who had recently erupted two supernumerary bicuspids on one side, and one on the other ; she had also two supernumerary teeth behind the wisdom teeth. Also a model of the upper jaw of a boy, showing a supernumerary permanent lateral incisor; it had succeeded a similar deciduous tooth.

A FEW NOTES ON ALVEOLAR HÆMORRHAGE.*

By JAMES M. NICHOL, L.D.S., Ed.

THE object of the present paper is rather to act as the starting-point of a good and thorough discussion upon the subject of Alveolar Hæmorrhage, and to elicit the opinions of those members who, from long experience, have a right to offer them, than to contribute anything either new or startling. That it is an important question for the dental surgeon to know how to treat an obstinate case of hæmorrhage following upon tooth extraction, or any kindred operation in the mouth, all will admit; and such a Society as ours affords peculiar facilities for obtaining some definite and clear principles upon which to act in such a case.

The subject naturally divides itself into three parts, viz :— Varieties, Causes, and Treatment.

I.—VARIETIES.

Our works on Surgery divide hæmorrhage into three kinds—arterial, venous, and capillary, and in addition to this well-marked classification, various attempts have been made to classify according to the causes, and such terms as traumatic, spontaneous, active, passive, critical, periodical, have been used. These, however interesting they may be, so far as other hæmorrhages are concerned, do not enter into our calculations so far as the alveolar varieties may require our treatment.

For all practical purposes, alveolar hæmorrhages may be said to be included under the heads of Traumatic, Vicarious, and Constitutional.

(*a*) *Traumatic.*—In a sense, all alveolar hæmorrhages are traumatic, but it will perhaps be better to confine this term to the ordinary primary hæmorrhage following the extraction of one or more teeth. It is, as a rule, easy of control, and generally ceases of itself in a very short time. At the same time, it may, from various causes, last so long that it becomes necessary to take means to stop it. If there be much inflammation of the surrounding tissues, primary hæmorrhage is likely to be very profuse and of some duration, owing to the vessels not contracting so readily as when in a healthy condition ; or the profuse primary hæmorrhage may occur as the result of accident, such as a portion of the tuberosity of the upper jaw coming away in extraction of the wisdom tooth; or a lower wisdom tooth may have its roots embracing the inferior dental artery, and may cause its rupture in extraction. These are, however, rare occurrences; and, speaking generally, the ordinary hæmorrhage following tooth-extraction is not profuse or long-continued.

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* A paper read before the Odonto-Chirurgical Society of Scotland.

(*b*) *Vicarious Hæmorrhage.*—Probably the most frequent explanation of exceptionally profuse hæmorrhage is, that it is vicarious of some other blood-flow. The most common illustration of this is that of a woman having a tooth extracted at the menstrual period, when very frequently an alarming hæmorrhage will take place, and the menstrual flow be correspondingly diminished, or absent altogether. Alveolar hæmorrhage may also be vicarious of epistaxis in full-blooded people who are subject to periodic attacks of bleeding at the nose. A little judicious inquiry will generally enable the operator to make up his mind upon a case of profuse primary hæmorrhage.

(*c*) *Constitutional.*—The hæmorrhages to which this term may be applied, undoubtedly provide some of the gravest cases with which we have to deal. Fortunately, they are so rare, that many dentists pass through a long professional career without meeting with one. Certain constitutional conditions seem to predispose to hæmorrhage; an anæmic condition, for instance, this being probably due to weakness of the contractile power in the vessels. Anything which tends to lower the system, as bad diet, or any chronic disease, is apt to produce a state of constitution favourable to hæmorrhage. In addition to all these, we have that special condition to which the name Hæmorrhagic Diathesis is applied, which is practically a confession of our complete ignorance as to its causes and treatment. What we do know about that state is, that it is often hereditary, that it is more frequent in males than females, but seems to be more often transmitted through the mother than the father, and that it is a congenital condition, usually manifesting itself first in early infancy; but as to its pathology the authorities differ completely. The symptoms include a marked tendency to hæmorrhage from very slight causes, or apparently from none at all, and in many cases swelling of the joints, especially the knee-joint. That which makes a patient suffering from this condition such a serious responsibility, is the fact that the primary hæmorrhage is often not at all profuse, and shortly ceases. Then some time after, secondary hæmorrhage will commence, which may either be profuse from the socket of the alveolus, or may consist of a capillary oozing from the edges of the gum round the wound, this latter form being the most troublesome to stop. The case is often further complicated by the fact that, either through ignorance or carelessness, the dentist is not informed of the state of matters before the operation, or even immediately after it; and he may have extracted not one, but several teeth, thus increasing the gravity of the case a hundred-fold.

II.—CAUSES OF HÆMORRHAGE.

These have practically been dealt with under the previous head, and need not be further discussed here, except that I would like to draw attention to a possible cause which I have not seen noticed hitherto, and that is alcoholic excess. My attention was drawn to this as a possible cause during the early part of last year. I had occasion to see a patient, a man of good position, who had ruined his constitution with drink, had passed through one attack of delirium tremens, and was then under treatment for the prostration following upon that attack. The first lower molar on the left side was very loose, and causing him a good deal of irritation, so it was extracted, and, as the bleeding did not seem anything more than usual, no extra precaution was taken. The hæmorrhage, however, did not cease, but continued in the form of a slow dribble all that day and night; the patient then became alarmed, and it was necessary to pay three visits in one day, and plug the alveolus firmly with lint soaked in Dr. Richardson's Styptic Colloid, each time, before the bleeding was finally checked. After a day's intermission, it broke out again, but less profusely, and after plugging again in the same manner, it finally ceased. One thing struck me very much in connection with this case, and that was the appearance of the gums, tongue, and surrounding tissues—they looked and felt perfectly disorganised and rotten, and I could quite believe that a scratch of the gums or tongue might easily set up another attack of bleeding. This coincides with the well-known fact that habitual drinkers make very bad subjects for accidents or surgical operations, their wounds, as a rule, not healing well. Of course, it is impossible to build up any theory upon one case only, but I mention it in case any one else may have noticed a similar one.

III.—Treatment.

Passing now to the all-important question of treatment, upon which the welfare, and perhaps the life of a patient may depend. In the case of simple profuse primary hæmorrhage, the treatment does not generally need to be of a very vigorous order. The application of a plug of lint saturated with Dr. Richardson's Styptic Colloid I have generally found sufficient, accompanied by rest in the recumbent position, with the head slightly raised. Where the hæmorrhage is vicarious it will generally be very profuse, but not of long duration; and the same simple measures will, as a rule, suffice to put an end to it. With regard to the more serious secondary hæmorrhage, the socket should be first syringed well out with warm water, then small strips of lint soaked in some styptic packed firmly down into it with a small bald-headed plugger; the lint is better used in small pieces, as you are thereby enabled to take the plug out piece-meal after the bleeding has been checked; whereas if you use one large strip of lint, the operation of loosening such a large plug is very liable to start hæmorrhage again. This plug of lint should be built up so as to project above the gum, and then some form of compress must be used to press it firmly and evenly. A very simple and very efficacious one can be made by taking a piece of gutta-percha tube, about three quarters of an inch in diameter, such as is used for call-pipes, have the piece long enough to extend over one or two teeth in front and behind, slit it up on one side and bend the edges apart, when it will be found to form a clumsy clamp, with a fair amount of spring in it; by means of a hot knife it can be pared to suit the shape of the jaw, and also gutta percha can be built up on the top of it so as to meet any teeth in the opposite jaw. Let this clamp be lined with lint soaked in styptic colloid, and the edges of gum round the plug carefully painted with a thick coating of the same styptic, then the clamp placed in position, and the patient directed to close the mouth until the teeth are about half-an-inch apart; this will allow of swallowing with a certain amount of ease, and will check any sucking of the parts, which is always to be prevented, as as it only places matters where they were. As soon as the gutta percha into which the opposing teeth bite, has cooled sufficiently, the jaws should be carefully bound up and kept so for some days. Messrs. Ash & Sons' "chin appliance" for retracting the lower jaw will be found very useful for this purpose, and is rather more sightly than an ordinary bandage. When all hæmorrhage has ceased for some days, the compress may be removed, but it is generally wiser to leave the plug for a few days afterwards, as it generally loosens slightly in that time, and can be taken out with less risk of starting the hæmorrhage once more. Should there be very few teeth left in the mouth, or none at all, I should think the best plan would be to take models, and strike upper and lower plates, to which very strong spiral springs might be attached, and the plates lined in the manner indicated above. If the patient is only kind enough to let the dentist know beforehand the danger he is running, I believe that in the great majority of cases secondary hæmorrhage can be prevented altogether by plugging the socket immediately after the operation with strips of lint soaked in the styptic colloid. It seems as if very little would check the secondary hæmorrhage at the moment of commencing, but once it gets fairly started it is much more difficult to stop. I have found several patients who announced themselves as "bleeders" give very little trouble when treated in this way. I should certainly under no circumstances extract more than one tooth at a time for a "bleeder." The multiplication of wounds only increases the difficulty of stopping the hæmorrhage. With regard to styptic; as you will have gathered, I pin my faith to Dr. Richardson's Styptic Colloid. It has many advantages over perchloride of iron; the latter making a nasty mess of the mouth, and even causing inflammation. Properly applied, in combination with firm pressure, I have never known the styptic colloid to fail. With regard to other local measures, the actual cautery has been tried in several cases, but with scant and only temporary success; and there is always the risk of wounding the cheek or lip in applying it. Matico leaf, tannic acid, gallic acid, and turpentine have also been tried sometimes with success, sometimes not. In one or two cases on record, everything that could be suggested has been tried, without success, and the termination has been the death of the patient. Of scuh a case, my old master, the late Dr. Roberts, of Edinburgh, gave an account in his paper read before this Society some years ago, and the results of that case are to be seen in the Society's museum, in the shape of an ingenious compress which he invented for checking alveolar hæmorrhage. I well remember that the gist of his teaching to his pupils in this subject was styptics and pressure, and I am bound to say I have found his teaching correct. I have said nothing on the subject of constitutional treatment, as I consider that belongs to the medical man's department, and such a serious thing as a bad case of secondary hæmorrhage should always be treated in conjunction with the physician or surgeon. But I cannot leave the subject without referring briefly to the important point opened up by the case communicated to the Odontological Society by Mr. J. S. Turner, at one of the recent meetings, in which the patient had been prepared for the extraction by being put on a course of tincture of ergot and sulphuric acid for a week previous to the operation. It was an undoubted case of hæmorrhagic diathesis, as the patient had upon several previous occasions bled almost to death as the result of tooth extraction ; on this occasion, however, although secondary hæmorrhage set in about twenty-four hours after the operation, it was of a very slight and unimportant character, and soon passed off. In this case, Mr. Turner had the advantage of knowing beforehand the condition of his patient, and under similar circumstances I should certainly see the patient's medical attendant, and consult with him as to the advisability of some similar course of preventive treatment ; but as it often happens that the dentist knows nothing about the danger until the operation is over, it is imperative that he should have all his apparatus ready, and at hand, for stopping hæmorrhage.

It will be found an excellent plan to fit up a small box or bag with all the most useful requisites for arresting hæmorrhage, so that if called out at night, as has happened to the writer, you have nothing to do but lift your bag or box and go.

One case of hæmorrhage, if it be a serious one, will be quite as much as any dental surgeon will ever wish to encounter ; and after meeting with it, he will be much more likely to over-estimate the risks of prolonged bleeding than to under-estimate them.

In conclusion, I can only enforce, as the result of what little experience I have had, the great desirability of plugging the cavity at once after the extraction, before the patient has left the house, if there is any suspicion of liability to hæmorrhage. As I have pointed out, this will often prevent secondary hæmorrhage altogether, and it is the secondary hæmorrhage which is to be so much dreaded; besides, it also prevents the injudicious attempts which the patient and friends make to stop the bleeding before calling in help; which often consist of putting the patient in front of a roaring fire, wrapped up in blankets, and administering hot drinks and mouth washes; this aggravating the very state of things which they want to stop; and, of course, the longer a case of hæmorrhage is allowed to go on before it is treated, the less likely is treatment to be successful.

DISCUSSION UPON MR. NICHOL'S PAPER UPON ALVEOLAR HÆMORRHAGE.

Mr. Wilson said, that in all ordinary cases (that is, where the blood was forming a clot) he found the mere plugging the alveolus with cotton wool soaked in Richardson's Styptic, and then placing over the plug and alveolar margins a saddle of cork, thick enough to bring direct pressure to bear on both by the closure of the jaws, quite sufficient. The saddle was made to fit in as tightly as possible between the teeth on each side, so that none of the pressure was lost, which would be the case if the saddle, whether made of cork, gutta-percha, or other material, was so broad as to include these teeth.

He was thankful to say that of these cases in which there was a want of coagulability, he had only met with one, the bleeding being set up by the patient (a boy) picking out a small morsel of a temporary root. Suspecting the patient of aggravating it by sucking, he covered a considerable surface with a gutta-percha-lined plate, and the case yielded to constitutional treatment. He decidedly objected to the use of perchloride of iron, or burnt alum, as styptics in the mouth.

Mr. Macgregor mentioned one or two cases which had occurred in his practice. About fourteen years ago, the late Dr. Angus Macdonald called him up about one o'clock one morning, to see a patient of his who was suffering from a severe attack of hæmorrhage from the sockets of a lower molar and bicuspid tooth, which had been extracted on the preceding day. The Doctor had, for four hours, been unsuccessfully endeavouring to arrest the flow of blood, using perchloride of iron as a styptic. Mr. Macgregor removed the clots of blood, and syringed the part thoroughly, and applied Richardson's Styptic Colloid. The first application was unsuccessful, but after applying it a second time, and using considerable force in packing the cotton steeped in the styptic down into the sockets, the hæmorrhage ceased. He waited for about an hour to assure himself that no recurrence was likely, and then left. The case was rather a serious one, as the patient was very weak and anæmic from the loss of blood, which had been considerable, and had it proved obstinate and recurred, a serious result was apprehended.

On another occasion, when putting in an artificial denture, he noticed that a loose root interfered with the adjustment of one of the clasps, and to remedy the matter removed it with the point of an excavator. Two days afterwards, the patient returned, with the blood flowing from this shallow socket. In the interim she had been to a druggist, who had attempted to arrest it with perchloride of iron, until the mouth was perfectly blackened with it. The bleeding was stopped in a short time, by a steady application of the styptic colloid.

In one instance, which occurred to him, the hæmorrhage recurred in the mouth of a patient after it had been arrested for one or two days. He had, when occasion required, used the saddle-shaped piece of cork to keep the plug in position, as referred to by Mr. Wilson, and found it very efficacious.

Mr. Finlayson mentioned several cases which had occurred in his practice, similar to those spoken of in Mr. Nichol's paper, particulars of which he gave to the meeting.

In treating hæmorrhage proceeding from extraction of teeth, he made sure that all clots were cleared out, these being, in his opinion, the main cause of the bleeding, as they were generally of a soft fibrinous character, containing fluid blood in their substance, and of a spongy nature, thus serving to keep the wound open. This having been accomplished, the edges of the gums were steadily and firmly pressed together with a slipping motion of the finger and thumb, and a previously prepared saddle of dry lint bound with floss silk, to prevent change of form or absorption, carefully adjusted to bring pressure to bear on the sides of the gums—more than on the top—the depth of saddle being so arranged, that it came first in contact with the opposing teeth or gum. He had never plugged the socket.

In all cases a chin bandage ought to be applied to prevent the lower jaw pressure from being removed for, at least, five or six hours—milk diet, quiet, a sitting posture, and coolness of surroundings being insisted on. Many cases of bleeding owed their origin to the administration of stimulants before or after the operation, and he had, for some years, adopted the rule of cautioning patients, either in hospital or private practice, to avoid the latter when unusual bleeding occurred in the surgery.

Mr. Finlayson mentioned the case of a boy, eight years of age, who had taken out one of his own teeth; the resultant hæmorrhage being so profuse and continuous, as to defy all treatment. Those in attendance were expecting death, the pulse being almost imperceptible, and the countenance pale to a degree. In this case, the bleeding stopped short of causing a fatal result, and the boy made a rapid recovery, being seen a few weeks afterwards running about apparently well, but with that delicate complexion peculiar to those of a hæmorrhagic habit—the mother was a "bleeder" also.

Leech-bites had sometimes proved troublesome; but, as a rule, the cleansing away of all soft, stringy clots, and the application of moistened matico, or the lunar caustic point, with immediate and continued pressure, dry lint pads being used, had always proved sufficient to stay further bleeding.

A very good internal remedy, in cases of this sort, he had found to be an acidulated solution of sulphate of magnesia, which, given every hour, acted as a depressant and astringent.

Mr. Munro made a few remarks to the effect, that if in a case of alveolar hæmorrhage the blood was seen to issue in small jets from the socket, or there was reason to suspect the partial rupture of a small artery, it would be advisable, before applying the plug and pressure, to pass a small sharp instrument down into the socket and completely divide it, and thus give natural hæmostatics a fair chance by allowing the inner coats of the artery to retract within the sheath, and afford a better opportunity for the blood to coagulate.

Mr. Mackintosh had found the styptic colloid most valuable, and had, also, in one or two instances, had occasion to tie up the jaw in the manner indicated by the previous speakers. He had also found water, as hot as it could be borne in the mouth, very effectual in arresting primary hæmorrhage.

The President said—That the paper with which Mr. Nichol has favoured us is a good and interesting one, is evinced by the hearty way in which its subject and premises have been discussed. Few practitioners of any length of practice but have had, at one time or other, considerable concern regarding the ultimate issue of some case of persistent or of secondary hæmorrhage. I fancy, however, if I may judge from my own experience, that there is seldom any cause for grave apprehension, the cases being few and far between which do not yield to careful and rational treatment. I would take exception to the general statement of Mr. Nichol, that where you have a predisposition to bleeding, not more than one tooth should be extracted at a sitting. I find, in practice, that the greater the number of teeth removed, the less proportionately is the hæmorrhage which follows; and in answer to the query, Why? I would illustrate it by analogy. Consider, for one moment, the teeth to represent so many tenements in a street, and that each house is supplied with water by branch pipes from the main. The total calibre of these branches is greater than the calibre of the main. Open one branch, the pressure is great; open two, and the pressure is reduced; open them all, and the pressure is reduced to the minimum. So with the blood-vessels, by opening more branches you reduce pressure, and give every chance to the tonic and contractile powers of the vessels to close up upon the clot forming with the sheath, and making a firm and non-porous plug. The large clots, seen in bleeding cases, result from a too rapid coagulation, and are consequently porous and spongy. Hot water, as a styptic, is a very useful application; the heat of the water should be about 120 degrees Far., hotter will scald and destroy the tonicity of the vessels, as well as impair the integrity of the clot; while the action of water at, or about, 120 degrees is that it expands the vessels, encourages coagulation, and the vessel being expanded during coagulation, upon cooling down to the normal temperature, contracts and compresses the clot, and renders it more dense. Cold water, on the other hand, being a capital solvent of blood—encourages bleeding—when cold is applied to a bleeding vessel or surface, it must be applied in a dry form. I use a very similar compress to that described by Mr. Wilson, using "Godiva or "Stent" instead of cork. Within the modelled compress I place cotton wool, and super-saturate it with collodion, placing it in position, and fixing the under jaw with a two-tailed bandage. This I sometimes precede with a lead and opium pill. I never plug the socket—firstly, because I obtain better results without it; and secondly, because the removal of the plug is apt to induce a recurrence of the hæmorrhage. As for Richardson's Styptic, while admitting that it is an excellent styptic, I think better results are obtained by the use of *pure collodion*, the presence of the tannin either being inoperative, or, if operative, it must be dissolved from out the collodion sheath, and render it less strong and valuable as an impervious covering.

I am glad that Mr. Munro has called attention to one cause of bleeding, perhaps more frequently attending tooth extraction than we are apt to admit, viz., the rupture of some small artery. The simple cure in such a case is, as Mr. Munro has pointed out, to take a fine-pointed lancet and cut the artery through; the mouths of the severed artery will then contract, and the bleeding cease.

Successful Candidates.—We observe with pleasure that, at the final examination held at Edinburgh on the 6th inst., for the L.D.S., Messrs. John and Fredk. and Wm. Masters, of Manchester, satisfied the examiners.

Fatal Dose of Cocaine.—A tragic occurrence is reported from St. Petersburg, to the *Pharmaceutische Zeitung*. About a fortnight ago, a lady patient came to Professor Kolemnin, suffering from a complaint which necessitated a painful operation. The professor decided to make use of cocaine as an anæsthetic, for the first time within his practice. He was guided in the administration of the drug by information obtained from French medical journals. Accordingly, he administered by the mouth 24 grains of cocaine in solution, and informed his students that French doctors habitually prescribe twice this dose, without the slightest ill effects on the patients. The operation was successfully performed, but a short time after the patient had been put to bed serious symptoms appeared, and death ensued within two hours. Professor Kolemnin immediately acknowledged that death was due to poisoning by cocaine, but the occurrence affected him so much, that he shortly after committed suicide by blowing his brains out. It is thought that the cocaine used by French doctors is generally very much adulterated, while in Russia the law against adulterated drugs is very rigorously enforced, and thus the dose which Professor Kolemnin administered, on the strength of French reports, proved fatal to his patient. This conjecture regarding the purity of the cocaine used in France, appears to us to be far-fetched; and it is more likely that a mistake has been made regarding the dose generally administered.

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"IS NOT DENTISTRY A SPECIALTY IN MEDICINE?"

A NEGATIVE answer to this question is the contention of no less an authority than Norman Kingsley, D.D.S., who is best known in England on account of his successful treatment of cleft palates by the use of obturators. Dr. Kingsley writes to Americans concerning American Dentists, *i.e.*, persons who reside in America and exercise the function of dentists; but, with minor differences, his remarks apply to us over here, and from this point of view, we propose to discuss Dr. Kingsley's remarks.

The like question to that which heads our article is often asked in England, and now that we find the authorities of our London Schools of Dentistry urging upon its students the advisability of their obtaining a medical and surgical qualification, over and above the L.D.S., it is high time for our students to ask themselves, Are we surgeons who practise dentistry; or are we dentists, pure and simple, who have taken medical and surgical qualifications because we believe that Dentistry is best understood and practised by those conversant with the general practice of physic?

Much of what Dr. Kingsley says is specious, and so much so, that, unless his remarks are very closely scanned, one may be led away to believe they prove the theorem that dentistry is a profession which is in no sense an offshoot from surgery; is in this respect, indeed, unlike ophthalmic surgery, orthopœdic surgery, and so on.

Dentistry, our critic says, is thought ignoble, degrading, unless practised as a specialty by medical men; while medical men deny dentists any status save as mechanicians, dentists claim fellowship with surgeons and physicians, insisting upon an equality and ethical uniformity with them. The unwholesome besmattering of dentists in America with "M.D.'s" may give some ground for the idea that dentists are eager for an affiliation with their purely medical and surgical brethren; but in England, at present, M.D.'s are less common than blackberries, and the degree implies a certain course of academic instruction, which in no sense affects the incumbent's social status. According to Dr. Kingsley, "there is not an old housewife in the country who is not more of a medical doctor, and better capable of treating the diseases of the family, than the majority of dentists." If this is true, it simply shows that their education in medicine is very meagre, but it certainly fails to show that such education is superfluous. Probably, no factor has brought more disrepute upon specialists and the restrictions they impose upon practice, than the very narrowness and imperfection of their ground-work knowledge of medicine and surgery. A dentist whose hands are skilled to labour, and who operates with dexterity and success, is but the machine played upon by his medical colleague, unless he is capable of grasping the general physiological and pathological bearings which teeth have upon the body and its functions as a whole. It seems to us false reasoning to say chemistry, botany, and so on, are collateral sciences to dental science, rather than leading to the knowledge of dentistry through medicine and surgery. No man, be he physician, surgeon, dentist, gynœcologist, or ophthalmic surgeon, can afford to fall short of a high standard of knowledge, first of the laws which govern the phenomena of health and growth throughout the animal kingdom; and second, of the many excursions into the domains of pathology, or departures from the healthy type, and the laws by which these are determined. Until he possesses such a foundation upon which to base his lines of practice, he is empiric, and often a dangerous mountebank, building his success rather upon the credulity of his patients than upon his own skill or experience. It is not forsooth! because dentists desire to be reckoned as medical men, or because they desire, by merely assuming high-sounding titles, to raise the social status of their profession, that they encourage their students to qualify as medical men. They recognise that, to be a first-rate dentist, a man must be a dentist, and something more than a dentist; or, to express the matter in another way, he must be a surgeon, and something more than a surgeon. The modern school of evolutionists teach that bird, beast, fish, and man spring from a uniform embryo, that they develop in the same lines for a time, and then branch off from their common origin, and assume the traits which constitute their ulterior morphological distinction. It is just so with the doctor, the surgeon, and the dentist; the M.R.C.S., L.R.C.P., or a man holding equivalent qualifications, is embryonic; having qualified according to law, he has to learn to qualify in practice. If he now devotes his energies to practising generally, he buds into the highly useful G.P., who knows nothing of dentistry. If he gives his time to surgery, he probably takes his F.R.C.S.; but if dentistry engrosses his time and labour, he retains only the salient bearing-points, so to speak, of his "doctor's lore," and engrafts on it his dentist's skill and dexterity.

To attempt to dissociate the education of a dentist and a medical student is, to our mind, a distinct step backwards. We, in England, are so far not ashamed of being dentists, that we glory in our profession. If we feel shame, it is because there are juggling tricksters among us, who parade their names on handbills and local newspapers, and adorn their windows with show cases. There must be black sheep in every fold, but, happily, those in our profession take the earliest opportunity to advertise their own shame.

THE SECRETARYSHIP OF THE B.D.A.—We understand Mr. Frederick Canton finds his many engagements require his retirement from the Honorary Secretaryship of the British Dental Association. All who have been brought into contact with Mr. Canton in his official capacity will recognise how kindly, straightforwardly, and efficiently his duties were performed. Unless Mr. Canton reconsiders his intention, his place will be filled up by a very well-known and esteemed member of the profession. At present no definite appointment has been made, but we may be sure it will be no easy matter to replace the late Secretary. The duties of an Honorary Secretary of an association like the B.D.A. are not light or easy of accomplishment. The head that wears the crown is proverbially less prone to sleep than when freed from that adornment.

PHYSIOLOGICAL ACTION OF NITROUS OXIDE.—Dr. Dudley Buxton, who has been studying this important branch of research for some years, is announced for a paper dealing with nitrous oxide gas and its behaviour towards the organism, to be read before the Odontological Society of Great Britain at the March Meeting. We most of us know that nitrous oxide prevents people feeling pain when they have their teeth pulled out, but we few of us know the why and the wherefore. We trust shortly to be enlightened on this point.

THE INTERNATIONAL MEDICAL CONGRESS OF 1887.—The filling up of the lists of officers to serve in the various sections have now been completed. Abstracts of the papers to be read will have to be submitted by April next. According to all accounts, the preparations making for our reception in America are most imposing and bountiful. If an understanding can be come to among dentists intending to cross over, whereby the travellers' agents can be assured of a definite number of persons who will bind themselves to go over, or pay their passage money, the tariff could be lessened very materially. *Verb. Sap.*

MODE OF FORMATION OF TARTAR AND OF SALIVARY CALCULI.—Considerations on the production of calculi in general; presence of microbes on their germs in those concretions.—It results from M. Galippe's observations and experiments that the precipitation of the earthy salts of the saliva is due to the micro-organisms it contains. The micro-organisms of the salivary tartar are not accidentally enclosed in that substance. They are the agents causing its formation. These micro-organisms, or their germs, preserve their vitality for many months. It is known that salivary calculi generally form round some foreign body which has entered the canal of the salivary gland. M. Galippe believes this body to act not as a simple foreign body, but as a parasitifer. Once introduced into the canal, the parasites act as they do in the mouth. He always finds some parasites in salivary calculi in the form of spores, and they are easily isolated and cultivated. Holding these views as to the formation of salivary calculi, he was led to investigate biliary and urinary calculi, and he has found in them also parasites which he believes to be the cause of their formation. Their mode of action he believes to be a chemical one, causing decomposition, or precipitation of substances normally held in solution in the fluids of the body.

JUBILEE DINNER FOR THE DENTAL HOSPITAL OF LONDON.—We have already noticed that this dinner, under the Presidency of Sir James Paget, Bart., F.R.S., will take place March 10th ; we are now requested to mention that if the circular issued by the Hospital's Secretary has miscarried through any mischance, that all interested in the movement and who desire to be present will communicate with the Secretary at 40, Leicester Square. The inclusive cost of dinner is only a guinea; stewards, however, pay twenty-five shillings, which covers all liability. We need hardly remind our readers that it is incumbent upon every dentist to make an effort to support the kindly, courteous chairman, and ensure the attendance of a very large number of diners.

"TRICKS OF THE TRADE."—We are receiving by every post cards which proclaim that in a street not five hundred miles from our publishing office a place of business has been started, where the public can go and for moderate prices (!) have their teeth pulled about. Of course this is a free country, and the public will do as it likes, only it will not meet *us* there. The barefaced way in which these touting cards have been sent out broadcast is too appalling, A more reckless defiance of the profession and its most cherished hopes and wishes could hardly be imagined. We refrain from mentioning any names, as we do not desire to make ourselves "lion providers" to such an establishment.

A CURIOUS POISONING CASE has been recorded. A young man recently used an aniline pencil to pick his teeth, and a piece of the pigment breaking off was accidentally swallowed, the result being that he had a severe attack of diarrhœa and vomiting, from which he only recovered after several days, and even then was very weak. This reminds one of the man, who, having dislocated his elbow in the vain attempt to pick his teeth with the point of the olecranon process, was cautioned not to attempt a repetition of the manœuvre. In like manner, dear readers, avoid aniline pencils, and stick to floss silk or quills.

MORE ABOUT SOZOLIC ACID.—This new antiseptic is more strictly named orthoxyphenyl-sulphurous acid. In composition it is parallel to salicylic acid, containing, however, the group sulphuryl (SO_2) in place of the carbonyl (CO) of salicylic acid. It is a reddish syrupy liquid, of sp. gr. 1·40, with a feeble and not disagreeable odour. It dissolves in water in all proportions, congeals at 8°, and distils at 130°. With ferric chloride it gives the same violet colouration as salicylic acid. Though a decided acid, it has not the corrosive action of phenol. It is said to arrest absolutely every fermentation, diastatic or fungoid, to a much greater degree than phenol and other well-known antiseptics. It has been recommended for photographic purposes, especially for mounting-pastes. The advantages of sozolic acid lie chiefly in its great solubility and freedom from odour—qualities which, together with the absence of corrosive action, should make it suitable for toilet preparations, such as mouth washes.

A RETROGRADE MOVEMENT.—A correspondent in the *Chemist and Druggist*, who signs himself "One who knows," says: "Of the 14,000 registered chemists and druggists, a great many are also registered under the Dentists' Act of 1878; yet how few of them attempt to take advantage of that fact! Dentistry is a branch which might be pushed and extended considerably, and would pay for pushing. Some will probably say they registered merely to extract teeth, but that it is no reason why they may not aspire to the higher branches. To those I would say, consult *a respectable* dentist (London preferred), and ascertain from him amount of fees for lessons in taking impressions, stoppings, etc., and they might arrange with him to do their mechanical work. They would find that *a few complete and partial show dentures* would be a great attraction, and an investment that would pay well. Those who are not registered would do well to also invest in sets, and arrange with a dentist to send down a qualified assistant to see patients, with whom the chemist might make appointments, upon terms mutually satisfactory. This is not a visionary scheme, as, having myself tested it with success, I speak from personal experience." The italics are ours; we are sorry for the "respectable" dentist who would lend himself to any such an imposition. And then that dreadful show case—an attraction. We wish "One who knows" knew a little more, and a little better.

PHYSIOLOGICAL ACTION OF CHLOROFORM.—Chloroform acts somewhat differently according as it is applied (i) to the skin or abraded surface, (ii) to the mucous membrane of the alimentary tract, (iii) to the mucous membrane of the respiratory tract.

UPON THE SKIN AND ABRASED SURFACE, Chloroform benumbs and acts as a strong irritant. If the action be prolonged as well, evaporation is prevented, vesication will ensue. It is, therefore, most important to guard against these effects during the administration of chloroform, by protecting the face by smearing it with vaseline.

Upon the Mucous Membrane of the Alimentary Tract, when swallowed, chloroform produces a sensation of warmth; it has a sweet taste. Anæsthesia follows swallowing a considerable quantity, but other and dangerous symptoms of irritant poisoning are provoked by the introduction of the drug into the stomach. Acute gastritis and death from collapse have in some cases followed, and caused death.

Chloroform, when inhaled, produces very different effects according as it is given, pure or diluted with air.

A New Substance.—We learn from a contemporary a new use, for imitating ivory, etc., has been discovered for potatoes. They can be converted into a substance resembling celluloid by peeling them, and after soaking in water, impregnating with eight parts of sulphuric acid, then drying and pressing between sheets of blotting paper. In certain parts of France tobacco pipes are made of this substance scarcely distinguishable from meerschaum. By subjecting the mass to great pressure, billiard balls can be made of it, rivalling ivory in hardness.

Abstracts of British & Foreign Journals.

THE INDEPENDENT PRACTITIONER.

HERBST FILLINGS.*

By Dr. J. P. Geran, Brooklyn, N.Y.

We are compelled, the writer says, to recognise the fact that the very best years of the doctor's life have been devoted to the fulfilment of his dream ; and though all may not agree concerning its merits, and many may criticise, yet all must admit the honesty of purpose and the sincerity and singleness of mind of the man.

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* Read before the Second District Dental Society of the State of New York.

Herbst's method will, the writer feels assured, secure the ultimate recognition of the profession.

For many years, the dental profession used hand-pressure for filling teeth with gold, tin, etc., and when the mallet was introduced many condemned it, and advanced strong arguments against it, such as the liability to fracture frail and thin walls, the production of inflammation of the periosteum, with the subsequent death of the pulp, etc., etc. At present, the writer believes, nine-tenths of American operators have adopted the mallet system.

Patients are gratified, and most positively declare themselves much pleased with this new method of Herbst.

Dr. Bödecker, last year, said that it would be well to fill about seven-eighths of the cavity by the Herbst method, and finish the masticating surface with the mallet ; fearing, possibly, that the operator would not succeed in making the gold cohere sufficiently to complete the filling with a smooth surface. Dr. Bödecker now completes the whole operation by the Herbst method, and the writer finds that the whole filling can be readily done with the rotary instrument. He sometimes makes retaining pits, fills them as usual by hand-pressure or the mallet, then adds two or three large cylinders, covers them with cotton, and forces the whole down or against the cervical wall, moving the instrument freely about the cavities. The retaining pits and the cotton prevent the gold from moving. He then uses a smaller rotating instrument for forcing the gold against the sides and the matrix, if one is used. After the bottom is well covered and condensed, cylinder after cylinder is added, and each is burnished down thoroughly before adding another, soft spots frequently sought, and if any are found they are condensed and filled even with the other part of the filling, keeping all as level as possible, and when the cavities are nearly or quite full, he finishes with No. 30 gold.

In contouring the superior laterals, he makes the restoration without a matrix. First he cuts the usual groove, packing the gold in the undercuts with the mallet, then continuing with the rotating instrument until the cavity is flush with the margin. Then, with a bloodstone rotating point, he burnishes on ribbons of Williams's electric gold, making the restoration complete, and the finished filling as dense and hard as if made with either the hand or electric mallet. Unless larger pieces are employed, it does not require as much pressure as Dr. Herbst appeared to use. All that is necessary is to anneal the gold slightly, bring each pellet in contact with that which has already been condensed, pass the bloodstone or agate instrument over them a few times, keeping the angles down and the whole as level as possible, and it will be found that a filling has been made quicker than by the old method, and in a manner that will allow finishing with a perfect surface.

IMPLANTATION OF TEETH.

By G. L. Curtiss, D.D.S.

The distinction between replantation and transplantation is that the former operations consist in either putting back a tooth into a socket from which it has just been drawn, or the placing of a strange tooth in a socket from which one has been freshly extracted ; while the latter operation, implantation, consists in making in the bone or process of the jaw an artificial socket, and ingrafting into such newly-made socket another tooth that may have been extracted not a few hours only, but even months or years before.

The writer has performed five operations of this kind, implanting six teeth.

Three of the patients state no soreness of the gums ensued after the morning following the operation ; all say that they observed no unusual or unpleasant results from the operation, and in every instance the teeth and gums present a healthy and natural appearance, the teeth fast becoming firm and solid as others in the mouth.

In one case a slight swelling of the face appeared, which was soon removed.

The first case was the placing of a superior second bicuspid in the place of a molar which had been extracted six years before. In the second case, the superior left bicuspid and the first and second molars had been lost seven years previous to the operation. He implanted a second bicuspid, and two weeks later two molars, completely filling this space with natural teeth.

The next patient had lost the superior lateral incisor. Being unable to obtain such a tooth, the root of an inferior bicuspid was taken, and a Richmond crown attached, filling the space and matching colour, etc., to correspond with the rest of the teeth. Another patient had lost a lateral incisor from the effects of an abscess. There was a great deal of wasting of the alveoli, although the tooth had been out about two weeks only. In this case, he took the root of an eye-tooth and attached a lateral incisor crown. Absorption had been so great, that there seemed but little besides the gum remaining. He drilled it into the old socket, and found only little bone in which to imbed the new tooth. This tooth was less firm than in the other cases.

His mode of operating, briefly stated, is as follows: The tooth receives the ordinary treatment, as in transplantation, the pulp being removed and the pulp canal filled, and is placed in a solution of bi-chloride of mercury, which, in turn, is placed in warm water and raised to a temperature of 110° or 115° F., and allowed to remain from thirty minutes to an hour, according to the dryness of the cementum.

The gums are dissected away, laying bare the process, and with a spear-pointed drill the socket is started on the line in which the tooth is to be placed, and this is followed with larger drills and trepans, until the socket is the size of the tooth he wishes to insert, when with corundum points he smoothes the walls of the socket. After syringing and thoroughly cleansing and disinfecting with a solution of bi-chloride of mercury, the tooth is inserted; it should fit nicely and firmly in the new socket. He then places closely-fitting bands of gold or platinum about the implanted tooth and its immediate neighbours, thus forming a yoke to prevent any motion in, or accident to, the new tooth, from mastication or otherwise. Two weeks is a sufficiently long time, in most of the cases, to keep this on the teeth, the implanted one in that time becoming apparently almost as firm as the other teeth around it. Patients should use a disinfecting mouth wash for a day or two after the operation.

SOUTHERN DENTAL JOURNAL.

EDUCATING THE PUBLIC.

By D. D. Lester.

The writer suggests that the teaching of the public in dental matters cannot be done effectually in the dental chair nor by means of books. He suggests that popular articles on Dental Hygiene should be contributed to the popular papers, and so the persons be got at who do not ordinarily come under the influence of dental instruction.

Literary Notices and Selections.

DENTISTRY NOT A SPECIALTY IN MEDICINE.

By Norman W. Kingsley, D.D.S.

(Continued from page 149).

That which makes dentistry as a science kindred to medicine as a science is the fact that it deals with a small but important part of the human economy. But the equally great fact that its methods are entirely distinct, requiring special education and special training, make it an independent science, and in no sense subordinate to the other.

The training of a dental student for his professional career is totally unlike that required by a medical student. Medicine involves hospitals and bedside practice, but dentistry involves, along with a study of the sciences, training the fingers, first, second, and all the time.

If dentistry be a specialty of medicine, where was the necessity for State laws regulating its practice, separate from those already in existence for the regulation of medicine? Does not the greater necessarily include the less? Does general surgery, which is a department of medicine, or oral surgery, which is a specialty, need special laws? Are not the laws of all the States, passed in the interest of medicine, quite sufficient to protect oral surgeons as well as oculists, gynecologists, and what not? Nevertheless, the State of New York, which is behind no other civilised community, did not include dentists among its exempts from jury duty, while it had exempted physicians, even from the organisation of the government. I claim for myself the honour of obtaining from our Legislature a special law which exempted dentists equally with physicians from that annoying service.

Dentistry became an independent profession, not through any spirit of rebellion against the medical profession, but from sheer necessity. The fathers of dentistry in this country were graduates of medicine, and hoped to dignify their vocation by grafting it upon medicine, and have the theory and practice taught in medical schools. Their application was refused, and the history of dentistry as an independent, progressive, and scientific organisation began, and to-day the wondrous fact is the astonishment and admiration of the scientific world. We have more than a dozen independent institutions of learning which teach everything that a dentist needs to know. We have an independent literature which is not indebted to medicine so much as it is to other sciences.

Anatomy, physiology, histology, microscopy, chemistry, etc., are not *medical* studies. They are *sciences* upon which medical and other studies are based.

We have an independent journalism, larger than the total of medical journalism when our history began. We have independent national, state and local organisations that are vital, active and progressive ; and what might once have been, viz., dentistry taught and practised as a specialty of medicine, cannot now, in the very nature of things, ever be brought about. Even if it were possible at this day to blot out all the organisations—literary, social, educational and scientific—which now mark its independence, and reduce the profession to a mere section of medicine, no man with any pride in his calling or desire for its highest attainments would consent to it. The attempt to make it so now emasculates and degrades it. Furthermore, the tendency of the times is against it. Great social and political problems are being rapidly worked out. The growth of States and of capital is towards centralisation. The growth of science is by segregation ; the cellular theory is beautifully exemplified in its development.

As knowledge increases, the sciences divide and subdivide into specialties, and the specialty, through its independent and frequently original methods of investigation, speedily takes rank as a distinct science. In separate organisations the sciences will continue to advance ; centralise them and make them specialties of one another, and the structure becomes top-heavy and crumbles.

Naturally, my audience will turn to the problem of the best method of preparing men for the practice of this independent profession. The day was in the memory of some of my hearers when the ideal philosopher had acquired and possessed the sum of human knowledge. It is not a century since a cyclopædia of modest dimensions would contain all that the human mind had gathered of all the sciences, in all the ages, which was worth knowing and preserving. The day is when dentistry—once an empirical trade, and now an independent profession—requires from those who would stand in the front a devotion to study and an active acquaintance with the current advance of allied sciences, greater than was demanded of the philosopher of a former age, who held within his own brain the entire sum of human knowledge.

We must not forget that it is these times and this generation which demands our notice. We are not making plans for the millennium, nor for some ideal and Arcadian state of existence. The duties of to-day crowd upon us, and to meet fully the to-day is the very best way to be prepared for the morrow. The morrow grows out of and upon the to-day. To plan for to-morrow and leave to-day is lunacy ; to meet fully the emergency of to-day, even giving no thought to the morrow, is the foundation of wisdom. Of course, I do not use the terms "to-day" and "to-morrow" in their literal sense, but make them figures of speech to stand for the present time and the great unknown future.

The fiat of nature that man shall *earn* his daily bread, has not been repealed. The struggle to-day for the necessities and comforts of life is as obligatory as ever, and with the rapid changes in our social life and increasing competition, we are forced more and more into narrower circles. The lads of this hour are men in the next, and within the hour they must become self-supporting. The law is inexorable.

The dental profession in this country is not recruited from the dilettanti of modern society—thank God—nor to any considerable extent from rich men's sons. The records of our colleges will not show ten per cent. of the students who are independent of their own earnings in obtaining their education, either already earned or their future mortgaged to return it. The grand achievements of the past and the hope and promise of a glorious future for our profession rest very largely upon this condition. Nothing makes success so valuable as the difficulties one overcomes in obtaining it.

Let me draw the picture from life. A young man with an academic education and limited means, with refined and artistic tastes, with natural abilities of that order that he is far more interested in the arts than in metaphysics or theology, is asking himself what occupation he shall adopt to obtain a living. As a boy, he could use his jack-knife with some skill, but if he attempted to swap jack-knives he was sure to get cheated. Commerce and trade are, therefore, not his sphere. His ambitions or his social surroundings prompt him to a more independent life than that of a mechanic, with fixed hours and daily wages. Neither the practice of law nor the practice of medicine offers any field for the gratification of his tastes, but in an eminent degree the practice of dentistry does. And now comes *his* answer to the query which is agitating every dental society in the land. He says: "I have determined to be a dentist, and I am going to adopt that course of training, which, with my limited means, will earliest make me master of my chosen profession. I do not wish to be a physician; I have no taste for nursing or gynecology, any more than I have for law or theology. The general culture which a knowledge of those sciences gives I would like, but they do not concern me immediately. I can gratify any desire that I may have in that way after I am master of this one profession, providing that I do not find in that one full employment for scientific investigation. I find there are schools for dental students, and that graduates from those schools have become the most honoured and skilful practitioners of dentistry that ever lived or ever will live, and with that encouragement before me, it is all I want."

Is the young man's reasoning wrong? He makes a practical application of conditions which Harvard, Yale, and Cornell recognise, and all the advanced thought of the age endorses, viz., that a man's education should have, first, special reference to his chosen line of life, and that those branches of science which do not have a direct bearing upon that calling may be eliminated without harm.

At this point I may as well meet squarely the issue which is being forced upon us by some short-sighted enthusiasts, viz., that graduation in medicine is essential as a basis of dental education, and in the great to-morrow all dentists must be, first, graduates of medicine, and after that dentists. I can only liken these gentlemen to the passenger who sits on the rear platform of a railway train with his back towards the engine, and views the scenery only after it has passed.

The Vice-President of the Southern Dental Association, in his recent essay on dental education, would banish the dental degree, blot out dental colleges, and compel all students to obtain their dental education in medical schools, receiving the degree of Doctor of Medicine before allowed to practice. He has the hardihood to predict that such a condition will come about "within the next decade." But he is no wilder in his lunacy than the present President of the American Dental Association, who says: "Dentistry is not a profession, nor can it be except as it is medical . . . And, so sure as the sun shines, the time will come when all dentists will be required to be medically educated." The trouble with both these eminent gentlemen is, that they are sitting on the rear platform of the train, and have put the wrong end of the prophetical telescope to their eyes, and cannot discern that the inevitable progress of events is exactly in the opposite direction. Besides, their vision is blinded with a vague idea that M.D. tacked on to a dentist's name makes him, in the eyes of the community, and in fact, a better dentist; but no more foolish fallacy ever took possession of a misguided brain. The status of dentistry to-day shows it. The most skilful practitioners in the world, acknowledged so both by the community who seek their services and by their professional *confreres*, receive the reward of their merits, utterly irrespective of graduation in medicine or the possession of that degree through favour.

But there are other gentlemen equally capable of casting the dental horoscope, who express themselves differently.

Before the American Dental Association, in August, 1884, Dr. C. W. Spalding, whose eminence as an author, teacher, and practitioner no one will question, made use of the following language :—

"In this matter of preliminary medical education, it seems to me that the cart is put before the horse. Let us perfect ourselves in dentistry, and then, if we choose to adorn ourselves with a medical education, all very well. The difficulty is, that we attempt to lay the foundation in the science which does not include our own at all, or, if at all, only to a small extent. What is the difference between dentistry and medicine? The foundation principles upon which dentistry rests are anatomy, physiology, and chemistry, including also special pathology, therapeutics, and materia medica, with what we call operative and artificial dentistry. These compose the basis upon which the science of dentistry rests. It does not include an accurate knowledge of obstetrics and gynecology, nor an accurate knowledge of fevers and the like. Why should we educate ourselves, or require others to educate themselves, in branches that do not essentially belong to our profession? Why should we educate ourselves in non-essentials first, and in essentials afterwards? Let us have the essentials first, and then, if other things can be added to advantage, that is a good thing."

(*To be concluded.*)

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Annual General Meeting, January 10th, 1887, T. CHARTERS WHITE, M.R.C.S. and L.D.S. Eng., *President, in the Chair.*

THE Minutes of the previous meeting having been read and confirmed,

The President announced that the following gentlemen had been duly nominated as candidates for membership, and would be balloted for at a subsequent meeting, viz. :—

Frederick Arthur Canton, L.D.S.Eng., 34, Baker Street, Portman Square, W.
William Cass Crayston, L.D.S.I., 11, Valley Bridge Parade, Scarborough.
Oswald Fergus, L.D.S.Glasg., D.D.S. Univ. Pennsylvania, 41, Elm Bank Street, Glasgow.
Walter Glaisby, L.D.S.I., 4, St. Leonards, York.

The President declared the Ballot open for the election of officers, and Messrs. E. Bartlett and J. J. Holford were chosen to act as Scrutineers.

The President then called upon the Librarian for his Annual Report.

Mr. Weiss said he was happy to be able to report that the Library was in a satisfactory state. The number of new books added during the year was not large, since but few new works had been published of late, and the library being nearly complete there were not many old books of which they did not already possess copies, but if any of the members should come across any old books on dentistry which were not to be found in the library, he should be glad to purchase them. He was very pleased, also, to be able to state that there was an increase in the number of books borrowed, and for the first time more members than students had made use of the library, viz., sixty-one members, and fifty students ; in previous years the number of students had exceeded that of the members.

Two books were missing—the sixth volume of "Todd's Anatomy" and "Quain's Anatomy." The latter was a very old edition, and perhaps the borrower thought that if he did not return it a newer copy might be presented.

The Treasurer's Report was presented by Mr. Hepburn, who read the following letter from Mr. Parkinson.

"*36, Sackville Street,*
"*January 10th, 1887.*

"My dear Mr. President,

"I am still a prisoner after dusk, so forward you an account of all I know concerning the Society.

"You will find our receipts for the past year are about the same as last year.

"Our expenditure under the head of Sundries includes the cost of our Conversazione at the Medical Society's Rooms in August last. This has diminished any surplus we might have had to £20 8*s.* 1*d.*

"These expenses were kept as low as possible, by the able management of our Secretaries, to whom many thanks are due.

"I have not as yet been able to get at our exact number of members at present, but will do so in time for publication, as also the members we have been obliged to remove from our Society for non-payment of subscriptions; these subscriptions are three years in arrear, including the present session, and are more numerous than we could wish.

"I am sorry not to be with you this evening, but hope in the course of another month to be in a state to get about of an evening again.

"Will you kindly ask our Secretary to make the enclosed statement to the Society for me? and oblige,

"Yours very sincerely,
"JAS. PARKINSON.

"T. CHARTERS WHITE, Esq., *President.*"

		Total
New Members elected (1885—86)—		
Resident ...	5	15
Non-Resident ...	9	
Honorary ...	1	
Resignations—		
Resident ...	3	4
Non-Resident ...	1	
Deaths—		
Resident ...	0	6
Non-Resident ...	6	
Removals for non-payment of Subscriptions ...		9
Number of Members ...		295
Honorary and Corresponding ditto ...		34

The Curator (Mr. Storer Bennett) reported that during the year, 41 specimens had been acquired for the Museum. As they had all been acknowledged at the time of their donation, it was needless further to allude to them.

Certain alterations in the arrangement of the Comparative Anatomy specimens had been commenced, by which it was hoped the collection would be rendered more easy of examination, and therefore of greater value for purposes of study.

A series of preparations was also in course of formation, which when completed would afford valuable information concerning the sockets and roots of teeth in various animals, and had already led to the discovery of some interesting features in the preparations examined, to which he hoped to allude on a subsequent occasion.

In conclusion, he cordially invited contributions of interesting specimens, whether any of a similar character appeared in the catalogue or not, duplicates being always valuable for comparison, &c.; and if specimens, especially human ones, were accompanied by a short history, their value would be greatly enhanced.

Many skulls illustrating the dentition of the lower animals were still absent from the collection, and would be extremely welcome additions; among others he might mention were those of the lion, wolf, bull-dog, King Charles spaniel, toy terrier, greyhound, pole-cat, weasel, racoon, ant-eater, sloth, beaver; common, horse-shoe, and vampire bats; and duck-billed platybus.

Mr. Willoughby Weiss read the following letter, recently received from Mr. Alfred Coleman:—

"*To the Foreign Secretary, Odontological Society of Great Britain.*

"Dear Sir,

"In the interesting paper by Dr. Dudley W. Buxton, 'On the Physiological Action of Nitrous Oxide,' I notice an almost unaccountable error the writer has fallen into in respect of myself, where, viz., at page 141 of the Transactions (March, 1886), he says, 'and Coleman pointed out that were oxygen liberated, it would probably produce the most baneful results upon the organism.' He further proceeds to demolish such opinion, and he can easily do so. 'However, this objection has little weight when we consider that it would be the tissues of the body which would take up the oxygen liberated from the gas and employ it for molecular integration.' But the writer he quotes distinctly says 'the liberated *Nitrogen*,' which greatly alters the question as put, and gives Dr. Buxton, as I think he will see, one of the strongest arguments in favour of his view, that nitrous oxide is not decomposed in the animal system. I think it might also be gathered from Dr. Buxton's paper that I had done little more in the matter than make the (misquoted) suggestion respecting the condition of nitrous oxide when taken into the circulation. The fact is that I devoted many weeks to the careful analysis of the products of respiration after its inhalation. At that time I was also in correspondence with my friend and former instructor, Dr. Frankland, and it was at my desire that he kindly undertook his interesting and valuable experiments on the subject, and to which Dr. Buxton refers. I am fully in accord with Dr. Buxton in his view that as an anæsthetic, nitrous oxide differs in a marked degree from ether, chloroform, or like compounds. I have in my own person, on several occasions, borne unpleasant experience to the fact that a condition prevails prior and subsequent to perfect unconsciousness produced by the first, when the sensations are greatly exaggerated, and when the pain of tooth extraction is an agony almost impossible to describe; whereas, in the case of chloroform and ether, I have been able on my own person to open abscesses, and even extract a molar tooth, without feeling anything of the former, and very little of the latter. There are several other points in Dr. Buxton's excellent paper I could wish to allude to, but they would, I feel, exceed the proper limits of a letter. One matter in connection with this subject I may perhaps mention, as it may be of use to others. In New Zealand, as far as my experience goes, owing to the want of such admirable training in operating under anæsthetics as is offered at home by our Dental Hospitals, the operators are very deliberate, and by comparison slow. To get a longer period of anæsthesia under gas and ether I have been employing an instrument constructed on much the same plan as the chloroform inhaler (through the nose) described at p. 277 of my work on Dental Surgery, only for administering ether. In a recent case I believe I could have kept up the anæsthesia for an almost unlimited time.

"I remain, yours faithfully,

"*The Wood, Nelson, N.Z.*, "ALFRED COLEMAN.
November 12th, 1886."

The President remarked that though Mr. Coleman was so far away, he evidently had not forgotten his old Society.

Mr. Hutchinson proposed that a copy of the letter be forwarded to Dr. Buxton, and that his reply be published with the letter in the next issue of the Transactions.

Mr. F. J. Bennett thought it would not be in accordance with rule to publish anything in the Transactions which had not been brought before the Society. If Dr. Buxton had any answer to make to Mr. Coleman's communication it ought to be submitted to the Society before appearing in the Transactions.

Mr. R. H. Woodhouse thought that Mr. Bennett's view was correct, but it was not necessary to discuss the point, since Dr. Buxton would have an opportunity of answering Mr. Coleman's criticism when he read the second portion of his paper, which was at present put down for the March meeting.

The President then called upon the Scrutineers of the ballot for their report, and they stated that the list of office-bearers recommended by the Council had been unanimously accepted. The list was as follows:—

PRESIDENT.

Charles S. Tomes, F.R.S.

VICE-PRESIDENTS.

Resident: Messrs. Henry Sewill, S. J. Hutchinson, and J. H. Mummery.

Non-resident: Messrs. Andrew Wilson (Edinburgh), Richard Rogers (Cheltenham), and G. C. McAdam (Hereford).

TREASURER.—James Parkinson, Esq.

LIBRARIAN—Felix Weiss, Esq.

CURATOR—Storer Bennett, Esq.

EDITOR OF THE TRANSACTIONS—Frederick Canton, Esq.

HONORARY SECRETARIES.

Messrs. R. H. Woodhouse (*Council*), Willoughby Weiss (*Society*), and G. J. Boyd Wallis (*Foreign Correspondence*).

COUNCILLORS.

Resident Members: Messrs. Morton A. Smale, Arthur S. Underwood, E. G. Betts, J. F. Corbett, Thomas Arnold Rogers, Sir Edwin Saunders, John Fairbank, David Hepburn, and Ashley W. Barrett.

Non-resident Members: Messrs. J. R. Brownlie (Glasgow), J. H. Whatford (Eastbourne), F. H. Balkwill (Plymouth), George Brunton (Leeds), E. Apperley (Stroud), and J. H. Redman (Brighton).

The President then proceeded to deliver his Valedictory Address.

After the reading of the President's Valedictory Address, Mr. George Gregson proposed a cordial vote of thanks to the President, who had so ably fulfilled all the duties of his office during the past year. He (Mr. Gregson) had seen many Presidents in that chair, and he felt sure that all present would agree with him when he said that Mr. Charters White would be associated with those who were specially remembered for the efficient manner in which they had discharged their duties and furthered the interests of the Society. He was very glad to see that Mr. White had so thoroughly recovered from the illness which had deprived the Society of his presence on one occasion. Long might he live and prosper!

Mr. Morton Smale said he could not in Mr. White's presence say all that he should like to say about him; he was inclined to wish him absent, that he (Mr. Smale) might speak more freely. But he could not help remarking that the experience of Mr. White's year of office showed how much the successful and harmonious working of the Society depended on the tact and judgment of its President. He had great pleasure in seconding the resolution.

The members having expressed with hearty applause their appreciation of Mr. White's services,

Mr. Stocken rose to propose a vote of thanks to the officers of the Society. It was fortunate in having so many members who were willing to devote a large amount of time to its welfare. It had in its Treasurer one who had long shown his interest in the Society, and in the Librarian one whose constant care was to increase his store. It was only necessary to walk through the Museum in order to realise the amount of time and labour devoted by the Curator to its improvement. It was not easy to find a man in all respects suited to the post of Curator, and they all felt that in the present holder of the office they had secured a great acquisition. He would not detain the meeting longer, but would ask those present to give a cordial vote ot thanks to all the officers of the Society.

Mr. H. Campion (Manchester) said it was needless for him to say anything of the character of the officers, since they were as well known to his hearers as they were to himself, and would therefore content himself with expressing the pleasure he felt at being allowed to second the resolution as a representative of the provincial practitioners. There were a great many provincial members who were unable to attend the Society's meetings as often as they could wish, but it must not be thought that they took no interest in them. He could state most positively that this was not the case. They all took a pride and an interest in the Society, and therefore it gave him great pleasure to second the resolution.

Mr. Weiss (the Librarian) said that he felt sure that the officers of the Society so thoroughly appreciated the honour conferred upon them that they would be content to forego any further acknowledgment; still they would none the less appreciate the vote of thanks.

The work of the Curator and of the Librarian had been specially referred to. The enthusiasm of the former was evident, but his own duties were light, thanks to the completeness and good order to which the library had now attained. He thought, however, that the arduous, though perhaps less evident, labours of the Secretaries also deserved mention, and should certainly not be forgotten.

He had expressed a wish to retire in favour of a younger man, but his resignation had not been accepted, and he had consented to continue in office a little longer, but he wished it to be understood that he was willing to retire at any time.

He thanked the members for the kindness which they had always shown to the officers of the Society, and for which, he felt sure, the latter were all of them duly grateful.

The President said it only remained for him to thank the members for the very kind manner in which they had acknowledged his services. He could only say that his office had afforded him great pleasure, and he trusted that, relieved from the cares of office, he should continue for a long time to come a regular attendant at the Society's meetings.

The Society then adjourned.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE Third Ordinary Meeting of the Society was held on Thursday, January 13, 1887, the President, Mr. Bowman Macleod, L.D.S., in the chair.

At the instance of the President, Mr. Wilson made a few remarks upon Dr. Symington's recent paper :—

Mr. Wilson said that he thought they were much indebted to Dr. Symington for his very interesting and original paper.

When, nearly a year ago, he had first seen some of the sections, he was so much struck by the way in which they showed the relative positions of the developing teeth in the two jaws, that he asked Dr. Symington to favour their Society with an inspection of them, so soon as he had completed his investigations.

He considered that Dr. Symington's conclusions were quite borne out by the evidence adduced. In edentulous jaws, they had a good example of retrograde action, the absorption of the alveolar borders resulting in making the upper jaw, in most cases, narrower than the under; so much so at times, as to give considerable trouble so to arrange the molars in the artificial denture, as to obtain a stable masticating surface.

Some of the sections exhibited in a very marked degree the changing relations of the second permanent molars to the first, and of the third to the second, during their development.

In the absence of Mr. Nicol, the President called upon the Secretary to read the paper for the evening's consideration, entitled, "A Few Notes on Alveolar Hæmorrhage" (*see p.* 163)

NATIONAL DENTAL HOSPITAL STUDENTS' SOCIETY.

THE General Meeting of this society was held on Friday, Jan. 14th, Willoughby Weiss, Esq. in the chair, when the following were elected to fill the various offices for the ensuing year :— PRESIDENT—Henri Weiss, L.D.S., Eng.

VICE-PRESIDENTS.

C. W. Glassington, M.R.C.S., L.D.S., Edin.
Willoughby Weiss, L.D.S., Eng.

COUNCIL.

Past Students: C. A. Pattinson, L.D.S. (Eng.) ; E. C. Perors, L.D.S. ; J. F. Fripp, L.D.S. (Edin.)

Present Students: C. B. Phillips ; A. S. Jones ; F. S. Minett.

TREASURER AND SECRETARY TO THE COUNCIL.

A. P. Penrose, L.D.S., Glas.

SECRETARY TO THE SOCIETY—A. P. Stocken.

It was proposed and carried that a Curator and Librarian should be added to the officers of the society.

Jas. F. Rymer, M.R.C.S., was then elected to serve as the first Curator and Librarian.

The President then called upon the Treasurer for his report, which showed the society to be in a good financial condition. The balance sheet, on the motion of Mr. Gaddes, seconded by Mr. Henri Weiss, was adopted, and entered on the minutes.

The President then delivered his valedictory address. He stated that during the last year the society had been very successful having had a good paper at every meeting. The Smoking Concert had been a great success, as also had the Students' Dinner, about 70 sitting down, although last year there were about 100, but the increase in number on the last occasion was due to Mr. Oakley Coles, who was retiring from the profession, taking the chair. Mr. Weiss then made some very useful and interesting remarks to the Students concerning the premature removal of temporary teeth. Mr. Gaddes, in a few remarks, proposed a vote of thanks to Mr. Weiss for his able address, also for the manner in which he had filled the presidential chair during his year of office. Mr. Glassington seconded the vote, which was unanimously accorded in a hearty manner.

Mr. Weiss proposed a vote of thanks to the retiring, also the Secretaries, also the late Secretary, Mr. Wright, for their services during the last year.

Messrs. Penrose and Stocken having, replied the meeting adjourned. ARTHUR P. STOCKEN, *Hon. Sec.*

THE STUDENTS' SOCIETY—NATIONAL DENTAL HOSPITAL.

ORDINARY Meeting held Friday, February 4th, Henry Weiss, Esq., President, in the chair.

After the usual formal business, Mr. Chas. Glassington, M.R.C.S., showed the entire hard and soft palate and alveolar processes of the superior maxilla, in which was included a recurrent sarcoma, recently removed from the mouth of a woman an inmate of the Cancer Hospital, Brompton.

Mr. Rymer, M.R.C.S., related his experience with the muriate of cocaine, in which in three cases there had been great dyspnœa and mental distress.

Mr. Humby gave the description of a case of glosso-labial-pharyngeal paralysis, said by the physician in charge of the case, to be due to the heaviness of a complete denture with springs which was being worn by the patient. Mr. Humby elicited that several members of the family were suffering from different forms of nervous disease, and after a few conciliatory experiments referred the patient back to the physician with the opinion that the dentures had nothing whatever to do with the nervous lesion. The meeting was adjourned until Friday, March 4th.

THE ODONTOLOGICAL SOCIETY OF VICTORIA.

THE ordinary monthly meeting of this Society was held on Dec. 2; there was a large attendance of members.

Mr. MacGregor exhibited some artificial teeth manufactured in the Colony, and was requested to give an account of their manufacture at some future time.

A large number of abnormal teeth were exhibited by several members.

The President opened a discussion on "Bases for Artificial Teeth." The subject was taken up with animation.

The use of celluloid was condemned; the materials most in favour were shown to be gold and vulcanite, alone or in combination. The subject of Dental Ethics was postponed till next meeting.

GEORGE THOMPSON, L.D.S.E., *Hon. Sec.*

Dental News.

THE next meeting of the Odontological Society will take place on March 7, at eight p.m.

Business:—Casual Communications, by Messrs. A. S. Underwood, J. Achery, Henri Weiss, Vincent Cotterell, and W. Harrison (Brighton). Paper by Dr. Dudley Buxton. Sequel to his paper on the Physiological Action of Nitrous Oxide Gas.

WILLOUGHBY WEISS, *Hon. Sec.*

RETIREMENT OF MR. BULLIN, OF CHESTER.—At the annual meeting of the governors of the Chester General Infirmary, held on Jan. 25, His Grace the Duke of Westminster, K.G. (President) in the chair, Mr. Fred. Bullin, J.P., L.D.S., Eng , retired from the position of Hon. Dental Surgeon, which he had held for over twenty-five years, and, in accordance with Rule 43 of the Institution, assumed the position of Consulting Dental Surgeon to the Infirmary; consequently, there is a vacancy for an Hon. Dental Surgeon.

HOSPITAL REPORTS.

Monthly Statement of operations performed at the National Dental Hospital, from Jan. 1 to Jan. 31, 1887:—

Number of Patients attended		1762
Extractions	Children under 14	314
	Adults	504
	Under Nitrous Oxide	460
Gold Stoppings		83
Other Stoppings		472
Advice and Scaling		430
Irregularities of the Teeth		164
Miscellaneous		121
Total		2548

CHAS. W. PATTINSON,
House Surgeon.

Work done at the Victoria Dental Hospital of Manchester, during the month of January, 1887 :—

Number of Patients attended		792
Extractions	Children under 14	606
	Adults	
	Under Nitrous Oxide	80
Gold Stoppings		26
Other Stoppings		45
Miscellaneous		191
Total		948

HENRY L. KNOOP,
Hon. Secretary.

Report of Cases treated at the Royal Portsmouth, Portsea, and Gosport Hospital, from January to December, 1886 :—

Teeth Extracted	573
Advice Cases and Scaling	112
Irregularities of the Teeth Treated Mechanically	39
Total	724

W. H. KIRTON, L.D.S., R.C.S. (Ireland),
Hon. Dental Surgeon.

APPOINTMENT.

MR. JAMES F. RYMER, M.R.C.S., Eng., has been appointed Assistant House Surgeon to the National Dental Hospital, W.

ERRATA.

IN Mr. Bellamy's paper on "Amalgam Fillings Under New Conditions," the following alterations should be read:—

7th line from bottom of page 118 should read :— "or extreme nervousness *of the patient* defies thorough excavation."

3rd line from the top of page 119, read *cavity* for "coating."

4th line from top of page 119, read *ingenious* for "ingenuous."

ANSWERS TO CORRESPONDENTS.

IN reply to "M.'s" query regarding the purchasing of a practice belonging to a man of about 63 years old, 2 years' purchase is the outside price, and this usually includes a long personal introduction.

British Journal of Dental Science.

No. 459. LONDON, MARCH 1st, 1887. Vol. XXX

COCAINE.

By Charles Wm. Dunn, Florence.

The effects of Cocaine in removing pain locally, are worthy of great attention; and if we could use it without fear of any bad consequence, or if we were sure of possessing a certain antidote to it, some drawbacks to its use might be removed.

I think that the description of two cases in which the injection of it was followed by very unpleasant and even somewhat alarming consequences, may be interesting to your readers.

The first was that of a young lady, about twenty years of age, whose left under wisdom tooth it was desirable to extract.

I injected one grain of Hydrochlorate of Cocaine, dissolved in ten drops of a 2 per cent. solution of carbolic acid; half of this quantity I introduced on the lingual, and half on the outer side of the tooth.

About five minutes had passed, when I remarked that her head fell to the side, and on asking her to raise it, she said that she was unable to do so. She complained of feeling her hands and feet very cold, and a complete incapacity of moving her limbs.

I gave her some Cognac, and had hot applications made to her hands and feet. In about twenty minutes she recovered; but evidently was weak, and very uncertain in her movements.

The second case was that of an elderly man, who also wished to get rid of the left under wisdom tooth. I injected the same quantity and preparation which I had used for the preceding case. Two minutes had not passed before I noticed that he opened and shut his eyes in a very peculiar manner, staring very vacantly. He could support the head, for he moved it perpetually from side to side, but he could not collect his thoughts clearly. "Where am I? What are you doing? How very extraordinary!" he constantly repeated. "I can't move! I can't get up!" He is a medical man, and had felt some curiosity to try the effects of Cocaine. He became faint, felt a desire to vomit, but did not complain of cold; he appeared tobe dazed.

He took some brandy, and then hot tea, and in about half an hour got comparatively well. By this time the pain had returned to the tooth, and he was very anxious to have it extracted, and insisted upon another injection of half a grain. I strongly objected, but he beat down my opposition, so that I gave way, and injected another half of a grain. This, curious to say, seemed to have no effect either generally or locally. The tissues about the tooth were as sensitive as ever to the touch. I then injected another half grain, and this also had no effect.

We both agreed, that it would not be prudent to inject more at that moment. He passed a sleepless night, and felt greatly upset on the succeeding day.

I have injected Cocaine forty or fifty times, and these are the only cases in which I have noticed bad effects.

Before I used the 2 per cent. solution of carbolic acid in connection with Cocaine, I had followed Mr. Brunton's directions, and had received great assistance from him; still, I had met very little success in producing local anæsthesia. But in the *Lancet* of Dec. 11th, 1886, I saw a description that a French gentleman, M. Viau, had used Cocaine in a solution of carbolic acid.

On trying this, I found no difficulty in removing the sensitiveness.

A gentleman at Siena, Sig. Bargagli, sent me a little pamphlet in which he describes having used the Cocaine in the same form; that is 1 gr. Cocaine, 10 drops solution 2 per cent. of carbolic acid, very successfully in nine cases, for extraction of teeth; and when I wrote to thank him, he answered that by that time he had applied it successfully in thirty-eight cases; that Prof. Silvestre, of that city, had used it in two cases with complete success: in one for operating for fistula, and the other, but with less benefit, for burning with the actual cautery.

Dr. Turnbull, of Philadelphia, injected the same preparation in a case of removal of part of the upper jaw, the operation being performed by Prof. Garretson and, which was fairly successful—I mean with regard to the removal of the sensibility of the part.

All this goes to show the powerful effects Cocaine possesses; but it would be well to know some antidote to it, when symptoms of danger show themselves. Strychnine and morphine have been mentioned, but very doubtfully.

The unfortunate fatal case at St. Petersburg proves very clearly what terrible consequences may sometimes follow the injection of Cocaine, and how vainly scientific men, possessing all appliances, may try their best to avert a catastrophe, without success.

DENTAL SANITATION.*

By Alton Howard Thompson, D.D.S., Topeka, Kansas.

A leading branch of the great science of medicine to-day is that of sanitation or preventive medicine. In it the causes of disease are studied with a view of preventing it and its resulting loss of life in the human race. Means for the removal of the causes of disease, or at least for counteracting their effects, are sought for by investigation and experiment, which, by intelligent and scientific application, do much to divert sickness and suffering, and increase the length of human life. By this work much good has been done, and much happiness conferred upon mankind.

In the near future it is likely that we will have a branch of medical specialists, professional hygienists, whose duties will consist in advising people in regard to the avoidable causes of disease, and the means of cultivating health. So much good has already been accomplished by popular education and practical hygiene, that every intelligent person nowadays is much more careful in regard to his health and the avoidance of disease than was a person of equal intelligence even so late as two or three generations ago. This popular knowledge and careful observation of the rules of health has increased the average of human life, and is a positive indication of progress.

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* Read before the Central Dental Association of Northern New Jersey, at Newark, N.J., November 16, 1886, and reported in *Dental Cosmos.*

In the science of the prevention of disease, dentistry should not be behindhand in the scientific application of sanitary measures within its own special limits ; the demands for systematic and thorough preventive science are so urgent, the opportunities for its application are so vast, and the good to be accomplished inestimable, by the prevention of those diseases of the teeth which entail so much suffering and discomfort. This is especially apparent in regard to the great lesion of caries. The suffering it causes, the inconvenience it occasions by loss of the teeth ; the fatigue, pain, and expense involved in its successful treatment,—all cry aloud for an effective means of prevention for this worst of dental disorders. Other diseases of the teeth and associate parts unite in the demand upon our investigating powers for the discovery of effectual means of prevention.

Beginning at the beginning—we find that there are so many factors entering into the calculation in endeavouring to estimate the influences which induce predisposition to dental diseases, that we cannot enumerate even those which we know or suspect. But one of the first causes of caries, for instance, is a congenital or follicular imperfection in the construction of the dental tissues, which renders the teeth more susceptible to the attacks of this disease. The profession are well agreed that, if the teeth were better organised primarily, they would be more resistive to the active causes of disease after eruption. It should therefore be our first duty to discover the sources of this imperfection, if possible, and to endeavour to correct them. Poor dental organisation may arise from deficiency in either the quality or quantity of the constituent or constructive elements of the dental tissues, or imperfection of the tissues from which they are evolved. The primal origin of these sources of imperfection is, of course, weakness, anemia from whatever cause, and the treatment which naturally suggests itself is something which will induce a return to normal conditions,—to health and strength. That is the theory—*i.e.*, given a condition of anemia or disease which causes defective formation of the dental tissues, the treatment indicated is a corrective of the abnormal condition and a restoration to healthful activity of the formative function.

But in practice we find the application of this theory of treatment difficult, perhaps impossible. As we cannot diagnose every cause of functional weakness which induces dental imperfection, so we cannot treat that which we cannot understand. But with what imperfect knowledge we have, we can accomplish something by the intelligent and scientific application of that knowledge; and further, by the old methods of reaching beyond positive science into the realms of empiricism, for we cannot wait for a lagging science to light us forward in this field of progress.

As the sources of imperfection of the dental tissues often lie in general weakness of all the tissues, and consequently of all the formative organs, we can comprehend and really treat somewhat intelligently and positively, and it is a field in which we could accomplish much good. If general anemia, transmitted anemia, were corrected, most if not all hereditary weakness and imperfection of tissues could be avoided, and strong organisations would be the rule and not the exception. For a strong constitution and perfect tissual organisation—*i.e.*, perfect normality in all parts of the system—would necessarily yield good and strong teeth. Strong, normal dental tissues being the first desideratum in the positive prevention of dental diseases, and strong teeth accompanying normal and strong general organisations, it follows that our first step is to produce strong constitutions. This would involve pre-natal advice and treatment, to which the prejudice of the times has not yet given way; but this will come in due season, and then we can lay the foundations for the teeth of the future.

Of course, the first necessity is a vigorous maternal system for the production of a strong, healthy child. But we cannot as yet go into scientific human breeding, and have people created according to the laws of selection. Being obliged to take them as we find them, we must treat them accordingly without the privilege of making them over. So we will need, as a first step, to study the maternal organisation, and advise such special treatment and care as may appear to be required in addition to general hygienic directions—such as good, wholesome, abundant food; careful exercise, proper rest, etc. This will conduce to vigorous health in the mother, and the child—other things being favourable—will more likely be strong and have good teeth.

Right here we might say that, regarding the influence of pregnancy upon the teeth of the mother, it is not so much, perhaps, that the teeth or bones or other tissues are robbed or deprived of any particular elements to be used in the construction of the forming fetus, as that her own assimilative functions are, for the time, held in abeyance, and that all the nutritive and assimilative force is directed to the evolution of the new being. While the maternal function has for a time the effect of accelerating all the physiological activities of the maternal organism, this activity is neither durable nor sthenic, but soon gives place to tissue-starvation. This is because all the nutritive elements of the pabulum, a proportion of which should go to repair the results of normal waste in the maternal tissues, are directed to and appropriated by the fetus, thereby actually starving the former for the benefit of the latter. The ordinary waste goes on in an unimpeded, physiological manner, but there is no compensating reconstruction as in health—a molecular retrogression, but no equalising progression. Her teeth become weakened by the continuance of waste within their tissues, there being no compensating re-molecularisation, and they become thereby the ready prey of caries. Here the question of treatment arises—can we correct this waste, induce assimilation in the maternal tissues, and at the same time aid the fetus in attaining a strong physique and a strong denture by special treatment?

The whole question of phosphate feeding is about to be reopened by the investigations of the indefatigable Dr. W. D. Miller, of Berlin. His prospective experiments on exact phosphate feeding, with alternate starving, of animals, with a view of testing its effects upon the tissues of the teeth, will be fraught with incalculable interest and value to the profession, which will await his results with impatience. In the meantime it has been pretty generally agreed by our thoughtful men that the old-fashioned notion of special feeding has little in it to commend it to our confidence. We are more prone to believe that the pre-natal treatment for the production of good teeth will be that which will conduce to the best health and the development of a strong physique, and following that—other things being favourable—good teeth cannot but result, with other strong tissues.

Hereditary diseases or predisposition to disease, or organic or tissual malformations, will require the special treatment which such conditions will indicate for their cure or modification; but the discussion of the pathology of dental embryology is not within the province of this paper.

During the first years of infancy, the greatest care must be exercised, and the greatest anxiety felt for the healthful development of the system, as it is during this period that the permanent teeth are mostly produced. As all the after health and perfection of the teeth depend upon complete organic and inorganic molecularisation during their follicular evolution, it is of paramount importance that this development should be healthful and vigorous. Any diseased or disordered condition of the system—and the baby is very much disposed to disorders during these years—will leave its indelible effects upon the developing teeth. Indeed, so marked and constant is this, that in practice, when we examine a child's teeth, and the incisors or first molars are pitted or shrunken, we almost involuntarily ask what severe illness the child had during its first years. If there is any marked lesion of the enamel, we almost invariably find that there was a severe illness, which may have been one of the exanthemata ; or again, a serious intestinal or nervous derangement, caused, they will say, by "teething," but which *we* know to be due, more than likely, to improper feeding during teething. Or we will often find that the defectiveness is accompanied by a history of artificial feeding during infancy, with its attendant illnesses, notably on "condensed milk." Right here we can make a positive rule, even with our present imperfect knowledge, that for perfect teeth the first desideratum is natural and wholesome food, which, by its good effects in producing natural, vigorous development of all parts of the system, will also produce good teeth. Artificial feeling, or an irregular or pernicious diet, by deranging digestion and preventing assimilation, starves the entire system—if nothing worse—and causes weak, imperfect organisation of all the tissues, by depriving them of the materials for construction and also of the strength to build. Especially do the teeth, which are so peculiarly susceptible to nutritive insufficiency, suffer from this deprivation, and often carry marks through life which mean nothing but a history of starved development.

Phosphate feeding during infancy is also a mooted question. A wholesome diet should contain abundance of lime-phosphate, not only for the dental, but for all the developing tissues, for there are few which do not contain the phosphates in some form. Such foods are simple, and are furnished to hand by nature. These, and these only, should be abundantly employed, up to the complete requirements of the system. Wholesome food, with fresh air, sunlight, exercise, rest, and complete emotional and mental quiet, must tend to produce a healthful frame and strong teeth. With progressing age, the food must be advanced from the maternal fount in infancy to other foods carefully adapted to the changing requirements of the digestion.

The treatment of the dental tissues after eruption, as regards molecular changes within their substance, will receive much illumination from the researches of Dr. Miller. In the meantime, we can only assume that the phosphate, or other waste, which causes those sudden deteriorations in the teeth which are so often met with in practice, must be the result of phosphate or other starvation. There is evident cessation of constructive nutrition, while waste, either normal or abnormal, goes on with unchecked, startling rapidity. We often find in young persons during adolescence that there suddenly appears a condition of molecular retrogression, or progressive softening of the dental tissues, which we sometimes find to be accompanied by irregular habits of diet, usually an avoidance of wholesome foods, and an abnormal appetite for pernicious and innutritious viands. In this diet, we may or may not find the cause of phosphate starvation. At any rate, we advise on that basis, although the coincidence may not be a hint from nature. Experiments of special feeding, as with preparations of phosphate of lime, have been repeatedly made, but the results have not been what we desired. We now think that we can hope for more from wholesome food and health-giving habits, which will tend to develop and strengthen the entire physique, and with it, of course, produce good teeth.

Phosphate starvation may result from a variety of causes. One of the most fruitful is that great physiological error of all civilised people in our day, and a principal source of the weakness, anemia, and depressed nutrition, which are the chief factors in the production of deficiently constituted teeth—*i.e.*, *mal-nutrition.* We eat enough, perhaps we digest enough, to supply all purposes in the normal economy of the system; but we surely do not assimilate enough for the construction or re-construction of tissues. We fail in this primary construction during development, and we fail in after re-construction in the replacement of physiological waste. This is because we fail of a proper tissue assimilation and appropriation of the elements of the nutritive pabulum, which the digestive processes elaborate and throw into the circulation. The nutrition is there; the food is at the mouth of the hungry tissue, but it does not possess either the will or the power to grasp it and make it its own by working it into its structure. The molecules of the tissues lack that polarity which recognises and attracts the atoms necessary to the re-molecularisation of growth after waste. There is an electrical deficiency—a want of electrical tone, perhaps; so the food passes on to clog the blood and decompose therein, and in turn, perhaps, to cause those diseases of the eliminative organs which are so common. The discovery of the origin of this mal-nutrition and the application of a cure is, of course, the great desideratum; but of these we can tell but little. As all nutrition, whether for the production or the reproduction of tissue, depends upon the stimulus of use for its activity, perhaps we can assume that this mal-nutrition is the direct result of disuse. This disuse, transmitting a deficient stimulus to reproduction, a tissual atrophy results, which we so constantly observe. Then, after development, disuse deprives the tissues of that stimulus due to employment, which is the source of its healthful demand for nutrition. If this be true, then the correct treatment is judicious exercise and use. If tissue-hunger is the demand, and follows upon use, then exercise must be called in to create it. So the mother, before the birth of the child, and the child after birth, must have careful, vigorous exercise. This is true of the teeth, also, that disuse will lead to atrophy of their tissues and surroundings, and that they, too, require transmitted stimulus as well as active. In a word, indolence, disuse, means atrophy, death; while activity, exercise, employment, means growth, health, life.

As to the external local treatment to be employed for the prevention of diseases of the teeth, there is not much to be said. The two great means of prevention are *active use* and *cleanliness*.

Use as a prophylactic measure includes all that nature intended that the teeth should be used for, and the careful avoidance of all that she did *not* intend them to be used for, *i.e.*, abuses of all kinds. Mastication is of value in preserving the stimulus on which molecular activity depends in the dental tissues and in the dental environments, as well as for the sake of the function itself in the physiology of the economy. Therefore, food should be thoroughly and deliberately masticated, that all the ends of thorough mastication shall be fulfilled, and that neither the teeth of the present, nor those of the future, shall suffer from present or transmitted atrophy. All mechanical, chemical, or other abuse, must be carefully avoided. To this end, patients must be educated in all preventive care of the teeth. As to cleanliness, this is now so simplified that, by the light of the advanced science of the day, cleanliness is now akin, not to godliness, but sterility;

for where sterility is, there purity abides. This means that all sources of fermentation, all bacteria culture, so to speak, must be banished from the mouth. For the purposes of removing fermentable substances, we usually advise—first, the mechanical means of brush and dentifrice; then antiseptics for preventing fermentation; and next, for neutralising and counteracting the results of fermentation, antacids. As to the mechanical means, it matters little how the teeth are brushed, or what kind of brush is employed, provided the cleansing is thoroughly done, and the brushing not overdone. All particles of food, and other sources of fermentation must be removed from every part of the teeth and gums and mucous membrane. For not only the teeth and gums, but the tongue and fauces, should be well cleansed, to remove all the sources or products of decomposition. Especially is this desirable when any derangement of the stomach or lungs, or disorder of the membrane of the mouth, nose, or throat exists. As catarrhal affections of the nasal cavities are so frequent and so contagious to the other neighbouring cavities, thorough cleansing should be employed as a prophylactic, that they may not obtain a foothold in the mouth. This brushing must not be violent, but of that skilful kind which cleanses without irritation. The dentifrice should be cleansing, polishing, and antacid, as most of those supplied to us are; but there should also be careful avoidance of those proprietary dentifrices with secret formulas, which, by being too rapidly cleansing, are also chemically injurious. Antiseptics should be employed for the prevention of fermentation in the interstices of the teeth, and in the folds of the mucous membrane. The phénol sodique preparations or mercuric bichloride are the best and most effective. The antacids and antiseptics are preventive local prophylactics, and should be employed in accordance with the requirements of each case.

The external treatment of the teeth for the purpose of hardening the enamel is a field which has been but little explored, but we need a means of accomplishing this. We know that the zinc phosphate cement possesses this power, and we employ it in exceedingly soft teeth with decided results as to increasing the density of the dental tissues about the carious cavities. This is scarcely practicable over the entire tooth, but we require some means of producing a similar result by external application. In cases of very soft enamel, with chronic acidity of the saliva, we often prescribe the chalk-pack or lime-water wash, with some apparent benefit, but only so far as the antacid prevents acidity and stops corrosion. We yet require a remedy which will augment the density of the enamel by external application; and, from a physiological standpoint, it is not asking too much of the science of to-day to furnish this.

THE BIRMINGHAM DENTAL HOSPITAL.—The twenty-seventh annual meeting of the governors and subscribers of the Birmingham Dental Hospital, was held on Monday, January 3, when it was announced that the founder of the hospital (Mr. Adams Parker) had presented to the Hospital his collection of dental specimens, &c., with the hope that it might be the means of establishing a museum worthy of the institution. During the past year, 10,704 patients had attended, and upon these 10,037 operations had been performed.

DEATH UNDER CHLOROFORM.—The death of a man named Jones while under the influence of chloroform, occurred at Rhyl recently. The evidence of Dr. Eyton Lloyd was to the effect that, being called to the deceased, he found him suffering from dislocation of the right shoulder, the result of an accident on the previous evening. Various attempts were made to reduce the dislocation, but without success; and having applied all the force he thought he was justified in using, he decided to administer chloroform. As far as could be ascertained after careful examination, the deceased's heart appeared to be organically sound, and chloroform was administered. While the conjunctiva was still sensitive, spasm having relaxed, the dislocation was reduced. The patient had given three deep respirations, when death occurred apparently from syncope. All attempts at resuscitation failed. No *post mortem* examination was made. The above account is taken from the Journal of the British Medical Association, and is instructive as showing how extremely dangerous it is to entrust chloroforming to even qualified medical men, unless they possess sufficient knowledge of the agent in question. To perform any painful operation such as reducing a dislocation when the "conjunctiva is still sensitive" is to quadruple the danger, since the patient is subjected to a double shock, that of the operation plus that of the chloroform.

British Journal of Dental Science.

LONDON, MARCH 1, 1887.

THE DENTAL SECTION OF THE INTERNATIONAL MEDICAL CONGRESS, 1887.

One of the most recent developments in connection with this section is the conversion of Dr. Norman Kingsley. From being a virulent opponent of any movement which lent colour to the assertion that Dentistry is in any way a section of medical science, and so is justly admitted into a Medical Congress, Dr. Kingsley has become a warm supporter of the Congress; not only has he fully and completely retired from his former position, but he has announced himself publicly the friend and promoter of Dr. Taft's section. We indicated, in a recent notice upon the subject, that we dissented *in toto* from Dr. Kingsley's assertion that Dentistry was not, and could not be, a specialty in medicine; and in so doing, we are convinced that we merely put into expression the feeling of a very large body of the profession of English Dentists. But, unfortunately, we are not sure whether members of our profession quite realise that the natural corollary of their belief in their direct affiliation with the science of medicine, is that they are bound to support the Dental Section of the Medical Congress; otherwise, their pleadings will, as the lawyers say, "go by default." We have consistently supported the cause of this Dental Section of the International Congress throughout the vicissitudes of its career, and advocated its establishment at the time when it seemed not improbable that it would be ousted or swallowed in a section devoted to pure surgery. Now, however, that we have so far succeeded in establishing the section, it becomes of the greatest importance that English dentists should make themselves conspicuous, alike by the value of their communications, and by their numbers and vigour of debate. The session of the Congress, in September, will fall in the time when most dentists can get away, and, indeed, usually do go for their holiday; and, owing to the admirable arrangements which have been made, the expenses attendant upon the journey to and from Washington, and the cost of living and lodging during the Congress, will be so small, that a very large number of us ought to be able, without any exertion or bother, to attend. Perhaps at no time could it be said more truly that English Dentistry need assert herself, and show her brethren of America that she has more to boast of than a mere milk and watery imitation of American modes of dealing with dental lesions. Scientific Dentistry has attained a noteworthy position in England, and it would be well that the more philosophically-minded among us should reveal to the outside world that our schools are second to none, and the men we turn out need blush before no foreign critic. Dexterous and deft of manipulation as we see are the American operators, yet it would not be so very hard a task to find representative members of the profession over here who would run it hard ere they confessed themselves worsted, were they pitted against a transatlantic rival. At any rate, our prestige *must* suffer if we do not send skilled picked members of the profession to Washington—men who can read papers, join in debates, and give demonstrations in the various methods of manipulation here. It is not any too soon to make up our minds whether or no we shall go to the Congress; and further, whether we shall send papers to be read by us, or in our enforced absence. There are already such vast numbers of papers offered, on all and every subject, that it becomes expedient to avail oneself of the present, and to put in papers early to ensure their due examination and approval.

TERPINE IN THE TREATMENT OF NEURALGIA.

Dr. Ducroux has presented a paper before the Société Médico-pratique, describing some cases showing the good effects of terpine in neuralgia. The first was that of a woman, aged 47. Two years before, she had been attacked with neuralgia, consequent on occupying a damp house. Sulphate of quinine, and afterwards aconitine, gave temporary relief. On February 15, 1886, she was suffering from constant neuralgia on the right side of the lower jaw, in the right cheek and temple. There was also pain in the supra-orbital notch, the mental foramen, and in the occiput. The patient complained of a constant feeling of heaviness in the head, and of cold in the right side of head. Terpine (one grain) was given in three pills between meals, during three days. On February 19, considerable relief was obtained. The pains and the feeling of cold had disappeared, and also the heaviness of head, which had persisted for two years. The pains having returned in a few days, terpine was again administered in the same manner on February 25. The pains ceased, then recommenced, but in a milder form, and without any heaviness of the head. Terpine was again given on March 8. Neuralgia having again come on, doses of one grain were administered in four pills, beginning on March 16, and being continued for three days. During the month of April, these doses were repeated at intervals. At the end of that month the back of the head was still sensitive, but all other pains had ceased. At the beginning of May and June terpine was again administered, the pains having reappeared. On June 15, the patient was able to go out without extra covering on the head. The therapeutic effect of the terpine seems to cease after a few days. In cases of obstinate neuralgia, it might be advisable to give it for three days every week. The second case was that of a married woman, aged 35. At the age of 22 she had intermittent fever. From the age of 13 or 14, she had suffered from headache from time to time, and when she was 22 she had intermittent fever. A week ago she was attacked with pain in the right side of the head, differing from her habitual headache. This pain, which gradually increased, extended in front, around the ear, and over the temple and cheek, and behind, over the mastoid region. There was also pain in the external auditory meatus.

The pains were accompanied by a humming in the ears. Terpine (about a grain) was given in three pills, to be taken between meals. On April 29 the pains had disappeared, but the humming in the ears continued; small doses of sulphate of quinine were administered during three days. This had no effect. A few days before May 17 the humming in the ears diminished, and took a different form. The sound in the ears was no longer that of humming, but of running water. The patient could neither hear herself nor others speak. Terpine was again administered in the same way. The sounds in the ears diminished, and completely disappeared two or three days after the last dose. Dr. Ducroux believes that the disappearance of the pains was due to the use of terpine, and that it had some effect upon the sounds in the ears. The third case was that of a man, aged 23. Fifteen years before he had suffered from bronchitis, with hæmoptysis. In May, 1885, he was attacked with severe pain over the right eye, in the supra-orbital notch, and about the occiput. A blister was applied to the temple, and dressed with morphine; terpine was given in the way already described. The first morphine dressing did not relieve the pain, but the second, applied the following evening, was more effectual. The patient had then taken three terpine pills. As the improvement continued, only eight pills were administered in the three days following the second day. The neuralgia was completely cured. Dr. Ducroux attributes this result to terpine, as the morphine application produced no effect.

MINNEAPOLIS DENTAL SOCIETY.—This society, which was organised in 1882, has issued a most tasteful little programme for the year 1886-7. We note Dr. J. H. Martindale, whose writings are not unknown to our readers, is president.

PRESIDENTIAL ADDRESS AT THE ODONTOLOGICAL SOCIETY.—As was expected, Mr. Charles Tomes, F.R.S., gave a strikingly original address, which was well received by an appreciative audience.

Students' Societies and their Smoking Concerts.—We have again to record two concerts held in London by the students respectively of the London and National Dental Hospitals. Both concerts were, of their kind, good, and were further enlivened by some "real good" professional talent. We, however, must put in a word to our friends the students, and remind them that since these gatherings are really initiated and sustained by them, that they should prevent the one or two black sheep in their midst from ruining evenings otherwise most enjoyable, by the introduction of low buffoonery and rowdyism. The students of our Dental Schools are conspicuously sober, intelligent and refined, when compared with the common run of the students of London hospitals; and it is a thousand pities they permit a noisy, self-assertive minority to take away from them their character for decorum and sound common sense. Fun is fun, and not Jack-ass-ism.

Students' Society of the Dental Hospital of London.—We have received a neatly printed *brochure* containing an account of the annual meeting of this Society. We are glad our young friends are so well off as to be able to afford to print their Transactions, but we confess it seems an unnecessary investment, and one hardly likely to afford a due return in value for money expended.

Partridge *v.* The Medical Council. — We publish elsewhere in our present issue a brief report of proceedings in this case. As will be seen, some points of interest and importance are involved in the case.

A New Dental Journal.—With the commencement of the year, was started the *Western Dental Joarnal*, under the editorship of Dr. J. D. Patterson, and is published by Messrs. Pearson, of Kansas City, Mo. The journal is of a convenient size, and contains much that is of interest. Greater care, however, is needed in revision, as many typographical errors appear in the first issue, which mar this otherwise excellent venture.

ABUSES OF BAR AND BRIDGE-WORK.—It is a healthy and refreshing experience to read in a leading American Dental serial the following call to "halt and reconnoitre":—"In the name of those operators who have used, are using, and still hope to use bars and bridges to a reasonable extent in their practice, let me protest against the abuse of those devices. When we have one soberly advising the use of a bar in the back of the mouth carrying three or four teeth, and supported at the anterior end only, and when one of the fathers of the profession declares before the American Dental Association that 'if there is a tissue that will bear almost unlimited abuse it is the pericementum,' I think it time to cry a halt."

ANNIVERSARY DINNER OF LICENTIATES IN DENTAL SURGERY, AND ODONTO-CHIRURGICAL SOCIETY.—The Anniversary Dinner of the Licentiates in Dental Surgery, and Odonto-Chirurgical Society will this year take place on *Friday*, the 11th day of March, in the Balmoral Hotel, Princes Street, Edinburgh. It is permissible for each Member to bring a guest with him, if he will kindly notify his intention to do so beforehand. Dinner at 6.30. Tickets one guinea. W. H. Waite, L.D.S., D.D.S., takes the chair, while Mr. J. Austin Biggs fulfils the office of Croupier.

THE TEETH AND THE HAIR.—Mr. Baily, of Nashville, writes to the *Dental Cosmos*:—"Considering the common dermic origin of teeth and hair, would it not be well to observe and note their structural relations in the human subject? The hair of the head and face will, of course, claim principal attention in this connection, and as a dentist I have had occasion recently to notice several instances in which a superabundance of hair was associated with frail teeth, or the loss of teeth. One remarkable case was that of a boy, fifteen years of age, who had a plentiful head of hair, a full beard three inches in length, and not one sound tooth. I am aware that men frequently wear the moustache or a full beard to conceal the absence of teeth, but my thought is that between the teeth and the hair there is an interdependence of relationship which may be made manifest through general and recorded observations by dentists.

In connection with Mr. Baily's remarks, it is interesting to note that a German inquirer has, it is stated, taken four heads of hair, of equal weight, and then proceeded to count the individual hairs. One (red), was found to contain 90,000 hairs; another (black), 108,000; a third (brown), had 109,000; and the fourth (blonde), 140,000.

IODINE IN THE TREATMENT OF GLANDULAR SWELLINGS.—Dr. James Little, speaking before the Academy of Medicine in Ireland, says: "In the United Kingdom thousands of pounds are annually expended in the purchase of Iodine, which, after solution in spirit, is applied to enlarged glands in the neck and elsewhere in the body to promote their disappearance. The impetus to the employment of the iodine was given by Lugol fifty years ago, and given so strongly that it has reached our days apparently with undiminished force; and quite recently rather acrimonious discussions have taken place as to the merit of rendering the application colourless. Yet its value is a matter on which every practitioner should be able easily to form his own judgment, and any one who does so independently will, I think, soon arrive at the conclusion that if the solution employed, whether it be coloured or colourless, is a weak one, such as the pharmacopœial tincture, no effect whatever is produced; whereas, if it be a strong one, such as the pharmacopœial liniment, the result is that the enlarged glands get more enlarged, and if the application is continued an abscess forms in the surrounding cellular tissue." There is, doubtless, much truth in Dr. Little's contention; but it must not be supposed that counter-irritation in chronic glandular swellings is a useless or baneful method of treatment; experience of many years attests to its value in cases which have been carefully and judiciously selected.

CURE OF A LINGUAL ULCER BY GALVANISM.—Dr. Meyer, of Brussels, has employed the galvanic current with success in the treatment of a very painful ulcer of the tongue which had existed nine years. The current employed was of sufficient strength to be felt without causing any pain. The positive pole was held in the hand while the negative pole was applied for thirty seconds to the most painful points. The pain was quieted for several hours after the first sitting. The treatment occupied about eighteen months, with two intervals of six weeks each. The total number of *seances* was one hundred and ninety. A perfect cure was reported to have been obtained.

LANOLIN.—Mr. Thomas Fletcher writes :—"This substance is the fat recovered from sheep's wool, and for some purposes, will doubtless prove of value to the dental surgeon, owing to one peculiar property it possesses, in common with the well known "goose-grease," *i.e.* its power of penetration through the skin and its rapid absorption when applied externally. Unlike goose-fat, it is practically free from smell, and its value as a vehicle for the application of veratria and other similar agents, will no doubt soon become generally known. Lanolin is now an article of ordinary commerce readily obtained at a small cost, and it appears probable that in a very short time it will replace both vaseline and lard as a vehicle for external applications."

IODOL AND TEREBENE AS ANTISEPTICS.—Iodol 10 gr. ; Terebene 1 fl. oz. Dissolve and keep in bottles of nonactinic (deep amber-coloured or ruby) glass ; or keep in ordinary bottles in a dark place. This mixture may be used as an antiseptic, as a spray, or for saturating dressings.

CASE OF HUNTERIAN CHANCRE OF THE LIP.—At a recent meeting of the Medical Society of London, Mr. G. R. Turner showed a living specimen of Hunterian chancre of the lower lip, complicated by a mushroom-like growth on the chin. The patient had been infected some five months previously, and, about ten weeks since, the site of infection took on fresh morbid development. The inoculation had taken place in two different sites. There were syphilitic sores on the penis, and a suppurating bulbo in the left groin, as well as an eruption on the arms.—The President thought that in all probability the lips had been infected by accident by the patient's fingers.—Mr. J. Astley Bloxam mentioned a case in which two chancres of the lip had occurred in close proximity; he said he had seen three or four hard chancres in the same individual at the Lock Hospital. Such chancres might affect any part of the body, as, for instance, the eyelids, nose, armpit, and lower part of the abdomen.—Mr. Harrison Cripps said he had observed fourteen cases of Hunterian chancre, in unusual situations, during the past year. In one case there was a chancre on the eyelid of a woman, aged 70. The grandchild of the patient was suffering from secondary syphilis, and the patient said that she had contracted the sore from the child.

A PRACTICAL HINT.—To prevent gutta-percha from adhering to the instrument while filling roots, dip the instrument in alcohol as often as it is necessary. The filling will take hold of the root better if the canal is wiped out with alcohol.

DENTIST AND DRUGGIST.—At the Hastings County Court, on January 24, Mr. Mosely, surgeon-dentist, of Hastings, brought an action against Mr. W. Jameson, chemist, of the same place, to recover the sum of £20 4s. for some sets of false teeth. Mr. J. E. Spencer appeared for the plaintiff, and Mr. F. A. Langham for the defendant. Mr. Mosely, a surgeon dentist, stated that in 1884 he supplied Mrs. Jameson with some false teeth. He sent in his account, which was then ten or twelve guineas. On the defendant's representations, witness lowered the amount to £5 5s. Subsequently, witness supplied some further sets for defendant and his wife, and made sundry alterations. Cross-examined by Mr. Langham: I have frequently paid Mr. Jameson's accounts, but I have only sent in my bill once. I have not frequently said to Mr. Jameson that I had "nothing against him" except the one item, £5 5s. Mr. Jameson did tell me he should not recommend me again, and it was after that I sent in my account. Perhaps if Mr. Jameson had not said what he did, I should not have sent in my account yet. I do not know that it is common in my profession not to charge chemists. Defendant stated that he went to Mr. Mosely's, and had a set of teeth made for £5, for which he paid. Some time after, Mr. Mosely called him into his place of business and presented him with a complimentary set. In reply to a question, witness said that Mr. Mosely had frequently said he had nothing against him (Mr. Jameson). Witness had never received but the one account (produced). It was a common thing for an arrangement to be made between a chemist and a dentist with respect to patients. Mrs. Jameson stated that she went to the plaintiff's place of business to see about some alterations to her teeth, and he then presented her with a fresh set, for which he said he would make no charge. George Hayward Finkes, lately an assistant of the defendant's, stated that in his former position he had frequently recommended patients to the plaintiff. He had heard Mr. Mosely say he did not intend to charge Mr. Jameson anything. In answer to Mr. Spencer, witness said Mr. Mosely sometimes recommended customers to Mr. Jameson. Verdict for the defendant, with costs.

TO REMOVE WARTS FROM THE HANDS.—There can be nothing more disagreeable to a dentist than to have warts on his hands. To remove them, take sulphate of magnesia. Ten to twenty grains daily for a few days will usually suffice for an adult.

"SCIENTIFIC NEWS" is the name of a new sixpenny illustrated monthly, the first number of which will appear on the 1st of March. It will be devoted to the treatment of physics, chemistry, mechanics, photography, and applied science generally.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

A NEW MODE OF ROOT-CROWNING

By C. S. W. Baldwin, D.D.S., New York, N.Y.

The proposer of this system has sought to keep the secretions of the mouth from between the teeth and backing, which soon become offensive, so preventing disagreeable odours instead of creating them, as is usual in all teeth backed with gold, whether for gold plates or crown-work. It is his design to ferrule (dealing only with that class of crowns) the tooth with gold securely in such a manner as to have but little soldering, and consequently no investment of the piece, with its tedious accompaniment. The time usually required in setting crowns is thus lessened, and the operation simplified, so that it may be more generally adopted, and not be left to a few experts as at present.

The *modus operandi* is as follows: Select a Logan crown slightly shorter than would be used for setting without a ferrule. Counter-sink and prepare the inside of a root as for a Bonwill or any ordinary crown. If the outside of the root at the margin of the gum presents an irregular surface, then with Dr. Walter Starr's reducers shape it to such a size that the ferrule may be perfectly adapted to all parts. Take an impression, and produce in zinc or Rabbitt's metal a die, to form which take a plaster model of the root-end, an eighth of an inch long, and shellac it to the point of a cone, which can be easily made by turning down a large spool, thus making the deep mould in sand into which the metal is poured. With this die strike the gold (22 carat, No. 30 gauge, is most commonly in use), laid upon soft lead. A few blows will produce a seamless and perfectly-fitting cover and ferrule. After trimming this to fit the festoon of the gum, drill in it from the lower side a hole for the pin of the crown, leaving the ragged edge produced by the drill. Then fill the counter-sunk portion in the porcelain crown with oxyphosphate of zinc, and with the gold ferrule or cap in place, adjust the crown as you would wish it when completed. When the oxyphosphate is hard, you will find the ragged edge on the upper side of the cover will materially aid in removing and keeping the cap where it belongs. Unite the cover to the platinum pin in the crown with a small amount of soft solder,—tin and lead,—using muriate of zinc as a flux, a few blasts from the blowpipe being all the heat required. Then fill the root with oxyphosphate and firmly press to place. These caps might be made up at leisure, providing a few variations for double and single-rooted teeth. When a case is met that you cannot fit from your stock, choose a cap larger than the end of the root, and with a single clip of the shears cut to the centre of the cap, and with pliers spring together, lapping the edges until the size required is obtained. Solder with gold solder, and proceed as before.

GUTTA-PERCHA AND ITS USES IN OPERATIVE DENTISTRY.

By HORATIO C. MERIAM, D.M.D., *of the Dental Department of Harvard University.*

GUTTA-PERCHA is the product of the Inosandra gutta, a tree found throughout the southern part of the East Indies and the large islands of the Asiatic Archipelago. This tree is often over seventy feet in height. The juice can be seen in lines under the bark. This material was first introduced by Dr. Montgomery, in 1842. During his walks he noticed a Malay labourer in the fields working with a hoe the handle of which attracted his attention. He learned that it was made from the juice of a tree; that it could be moulded when hot to any desirable form, and was used for making canes, handles for whips, etc.

Rubber, a similar material, was discovered in 1735. The celebrated chemist, Dr. Priestly, used it for erasing pencil marks in 1770. It is claimed by some that rubber is contained in all plants that have a milky juice. Milkweed contains about four per cent. of rubber. A rubber has been made from linseed oil.

Birch bark boiled for a long time gives a material that responds to all the tests for gutta-percha, and it is curious to note that pure gutta-percha that has been sheeted resembles strongly birch-bark. The juice of both rubber and gutta-percha is a milky fluid, but that of gutta-percha, unlike rubber, coagulates when exposed to the air, like blood, and it may be skimmed off and kneaded together. The trees were first cut down to collect the juice, and upwards of 300,000 were sacrificed before the waste was stopped. Now the trees are planted and tapped, and the gutta-percha formed into large, longish lumps. We have to distinguish between two forms of adulteration; foreign substances, such as small stones, sand, and pieces of bark, added to increase weight; and, second, those that combine with it to injure its strength,—pitch, tar, etc. This last adulteration the chemist has to guard against, and therefore to test its strength it should be slightly warmed. The Chinese use crude balatta for the adulteration of gutta-percha. Gutta-percha is pliable at 77 and 86 degrees F., soft at 112, melts at 248, and is decomposed beyond this point. A piece of cable covered with gutta-percha which had been submerged for more than fourteen years was found to be in perfect preservation. It is also used for hose for conducting hydrochloric acid for the lining of tanks in which glass is etched. It constitutes the principal cement used in the shoe-shops when dissolved in bisulphide of carbon. There is also an elastic cement for cementing the soles of shoes, of which it forms a part. It enters into the manufacture of artificial leather for the linings of shoes. It is soluble in all things that dissolve rubber, essential oils softening and dissolving it under heat, and completely soluble in chloroform. Cables buried near the roots of oak-trees are often attacked by a fungus, and in parts of Kent, Wales, and near Dublin, by a small insect. It possesses a very strong fibre, and one which, unlike rubber, is elastic only in one direction. This is taken advantage of in the making of the materials which I have here, and in no case is it made so as to destroy this fibre.

Gutta-percha has a tendency after a time to go back to a resin unless protected from air and light. It is best preserved in water.

Different qualities will, of course, require different proportions to bring them to the firmness required for dental purposes. Pure gutta percha should be started with, working in about six parts of foreign matter; then testing and working from there onward. No strength is added by our introduced material. Hard materials added to the percha do not indicate toughness. Hence silex, pumice, and the like—he considers unfitted for use with gutta percha.

A great many varieties of substances have been recommended for this purpose—chalk, quick-lime, oxide of tin, oxide of zinc, and the various forms of mineral earths, talc, etc.

For a dark-coloured stopping he recommends G.P.A. (light brown), the best grade known to commerce, and for the light G. P. F. (marbled white). They may be mixed for a medium. For convenience they had best be bought sheeted. The gutta percha should always be fresh, and feel soft and unctuous in handling.

The splint gutta-percha, often called pure, which is occasionally recommended, is adulterated with tar or rosin—such adulteration must injure its fibre.

Many of the early gutta-perchas introduced for the use of dentists were made by dissolving in chloroform and stirring in the hardening materials.

But to fill the tooth of a rapidly growing blonde child with cohesive gold, consuming five or more hours in the operation, does not seem to him the work of a dental physician.

Speaking of the desirability of the use of gutta-percha, he says he has never directed the cutting off of portions of the gutta-percha fillings, but the pressing of them firmly into the cavity, using the sharp edge of the cavity to cut off the surplus ; and has not met with the shrinkage that other operators speak of.

Speaking of methods of using gutta-percha introduced by himself, he says :—Its use in fitting by impression is of importance in treating cavities difficult of access. A small piece of gutta-percha is softened by heat, and pressed into the cavity after excavation without drying. This gives the impression of the cavity ; remove, and trim even with the outline of the cavity. This is then dipped in the oil of cajeput, heated, the cavity dried, and the gutta-percha carried to place and pressed home. The same method can be employed in cavities on the lingual side of the lower third molar, or in cases so far below the gum that complete dryness is impossible. The pressing in of the gutta-percha, coated with this soft mass, carries with it the moisture of the cavity, and we get adhesion under water

The same method may be used in root-filling. A gutta-percha point or piece softened, of about the right size, should be fastened to the end of the instrument, dipped into oil, and worked in and out until the impression of the root-canal is secured, and then slipped off into place. It may be pressed up with a pledget of cotton moistened with alcohol. The gutta-percha for this purpose should be of sufficiently good quality to hold a point well when drawn out,—rather fibrous than friable. As a matrix in large cavities for retaining medicine, especially when applying arsenical paste, a piece may be fitted between the teeth and pressed out from the inside with oiled cotton, formed with burnishers, and made water-tight, and thus give for this purpose all the advantage of a crown cavity. The same may be used when filling with amalgam, for we can easily arrange for the rounded approximal contact or knuckle so much desired with a heated burnisher pressed into the gutta-percha matrix where we wish the point of contact to come. One advantage of this matrix is that it can be worn without irritation of the gums, and need not be removed until the amalgam is hardened. He covers all dressing with a piece softened in oil, not only for cleanliness between the visits of patients to the office, but because it is easier to judge of the progress of disinfection, as it can be seen that all the odour, if any, is from the canals, and not from cotton foul from being worn.

For the crown he has used the countersunk tooth by banding the root, grinding in the tooth, spreading the band both where it fits the root and the crown so that it tightens in both directions.

He now uses phosphate of zinc for fastening the band to the crown. He expects in time that we shall be able to fit the band to a crown, put in a little body, and then bake it on.

In some he drills out the pins of the countersunk tooth, which gives him a tooth that may be used in many ways.

He introduces the use of oils for softening instead of using chloroform, because chloroform completely dissolves it, while he only wishes to soften the surface. Oil also softens the oxide, making more of a paint or cement. The heavy linseed oil is of especial value here, so that one of our future root-cements may be an oxide with some purified oil of like quality. Again, many of the oxides of zinc are soluble in both acids and alkalies. It may have been noticed that the oxide of some gutta-percha fillings near the margin of the gum seems to wash out. In such cases he would use an additional quantity of oil and smooth with a burnisher dipped in oil.

THE INDEPENDENT PRACTITIONER.

PREHISTORIC DECAY OF THE TEETH.*

By Dr. C. T. Terry.

THE writer says, for thousands of years the ruling class used fermented drinks, drinking to excess new wine, and so producing derangements of the stomach.

Among the excavations at Pompeii were immense earthen vessels for holding wine, evidence of great profligacy among the inhabitants of this ancient city. Several skulls were examined of those who were buried in the ashes, and found many instances of decay in the teeth. Probably, the ruling classes have not lived hygienically for hundreds of years. The skeletons which have been preserved generally belong to this class, for they were found buried in churches or tombs that have been kept in good condition for centuries. The skeletons of simple peasants have not been preserved.

In order to ascertain the normal condition of the teeth of the human race, it is necessary to go back to the period when they chose their food instinctively.

Before man began to change his normal condition, when he was compelled to choose his food instinctively, a decayed tooth was unknown. If present, it was the result of accident, such as fracture in battle or otherwise, forming a receptacle for a quantity of food, which fermented and dissolved the bone; and it is still a question, even under such circumstances, if the healthy condition of the fluids of his mouth would not have prevented decay in such a case.

As man advanced in civilisation, his habitation became more luxurious, his food and drink more complicated, and his occupations less invigorating, and confinement of the young under shelter, for purposes of education, more frequent. The gradual increasing departure from the normal condition of the human race has been going on for thousands of years, has finally caused a great degeneration in the tissues and functions of the system, bringing the teeth into a condition to be acted upon in the mouth by direct causes of decay, such as acids and putrefaction. The writer believes that agents which cause the decay of teeth in the mouths of the present civilised generation would be harmless in the mouth of the uncivilised man who chooses his food instinctively.

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* Read before the American Dental Society of Europe, Aug. 2, 1886.

Decay of the teeth is certainly not of modern origin. Probably it has existed, to a certain extent, for hundreds of years. It has increased gradually.

There is more confinement in impure air in schools, factories, etc., than formerly, and much less pure air is inhaled than our uncivilised ancestors inhaled. If the inhabitants of this world at a former period were as far advanced as we now are in civilisation, their teeth would have been as bad as ours at the present time; and there is no doubt if, at any time past, man had reached the inventive perfection which we have, he would have lived just as artificially as we now do, the result of which is decay of the human teeth, notwithstanding all our scientific knowledge, which at best can only prevent decay to a certain extent; and unless we can discover a manner of living which will again produce the perfectly healthy organisms of man in his normal condition, when choosing his food instinctively, teeth will continue to retrograde.

CAUTION IN GIVING ANESTHETICS.

By Dr. L. W. Bristol, Lockport, N. Y.

Fifteen years ago Dr. Bristol refused to administer an anesthetic to any person unless there was a third person present. A lady came to him with her daughter, about 17 or 18 years of age. She wanted the right lower molar extracted, and desired chloroform. She was seated in his chair; chloroform was poured on a towel, and the bottle handed to the mother, telling her to place her thumb over the mouth. It was not necessary to apply more. The young lady took it kindly, and was soon under its influence. The tooth was extracted, and after a short time she came out from its influence. Being asked how she felt, she snapped out, "Don't speak to me." Her mother said, "Why do you answer the doctor so roughly?" She replied, "I did not come here to be insulted." Her mother asked her who had insulted her. She said the operator had; had hugged her and kissed her, and taken improper liberties with her. Her mother assured her that she stood right beside her every instant, and nothing of the kind had occurred. She insisted that her charge was true. The mother was told to take her to the next room and let her lie on the lounge, and she did so. On the wall over the lounge hung a map of the village of Lockport, and on the right lower corner were the words, "Drawn by E. C. Callen, civil engineer." She caught sight of that and began to scream and cry. "There, it is drawn by Callen. I did not want it drawn by him; I wanted Bristol to draw it, and now I have been insulted and ruined." Her mother quieted her after a short time, and asked me if patients often got such whims in their heads; he told her they had all kinds of hallucinations, but in his practice he had never met with so marked a case. "Suppose," said the dentist, "that the young lady had come here alone and gone home and told this story; what would you have thought? She replied, "I should certainly have believed her."

Poor Dr. Beal, of Philadelphia, was tried, convicted and sentenced to State prison on a case precisely like this; save that Dr. Bristol had a witness—her mother—in his favour, He impresses upon the younger members of the profession the importance ot having a third person present when giving an anesthetic, especially to a female patient. That mother has long since gone to her grave. The daughter married, and has three children. A short time since, a friend of his, in the course of conversation, alluded to the incident, when she replied : "If it had not been for mother I always should have thought and would have taken my Bible-oath that I was assaulted and ill-used at that time, and I have still the same impression."

Dr. Bristol refuses to give anesthetics as well as operate, on account of the following incident :—

A young lady accompanied by her brother came to have two teeth extracted, and wanted chloroform. He administered it, and extracted the teeth. She took it kindly, and came out from its influence all right, perfectly sattsfied, paid her bill, and left for home. On the way the horse took fright at the cars, ran away, tipped them out in the gutter, and the lady was taken insensible to a farm-house near by. They saw bloody saliva oozing from her mouth, and thought she was injured internally, but she finally recovered consciousness and told them the blood came from her mouth, two teeth having been extracted. This relieved their anxiety, and they took her home. The next day one of the family to whose house she had been taken came in and told me of the accident, and said she was badly hurt. After two months, in passing up the street one morning, Dr. Bristol met a lawyer, who said he wanted to see him in his office; he asked if Dr. Bristol remembered, two months before, giving chloroform to Miss ——, and extracting two teeth? "Well," said he, "she and her neighbours say she has not seen a well day since. They want me to commence a suit for damages. Cannot you and I come to a settlement without a law-suit?"

He replied, "In this case we cannot. She was not injured by chloroform. Did they not tell you that in going home from my office the horse was frightened at the cars, ran away, tipped her out in the gutter, and that she was carried in an insensible condition to a farm-house, and it was a long time before they could bring her out of that condition? "No," said he, "that is all news to me, and if it is true, we cannot make out a case." In a few days the young lady and her friends visited his office, ready to make the affidavit in a suit against me. He asked them if they had a runaway on the road home from my office, and if the young lady was pitched into the gutter and carried to a neighbouring house insensible. They admitted the fact, but wanted to know what that had to do with her taking chloroform and not seeing a well day after it. He told them that if he commenced a suit against me, I could show that the injury and shock to her nervous system was what caused her illness, and that I would beat them, and they have to pay the cost of suit. He declined, under the circumstances, to bring suit, and I never heard any more of the matter. We owe it to ourselves and the profession that we keep our reputation good.

OHIO STATE JOURNAL.

CASES IN PRACTICE.

By George W. Keely, D.D.S., Oxford, Ohio.

A permanent erupting tooth may be given a wrong direction by the remaining roots, or root, of its predecessor, and their timely removal will leave room for nature to direct it to its normal position. The temporary cuspids, if possible, should be retained until their mission is accomplished. When they are removed *prior* to the eruption of the first bicuspid, it will come forward and appropriate a part, or all, of the space due to the permanent cuspid; but if the first bicuspids are fully erupted and in contact, the danger is lessened. The case of a girl, aged 15 years, is cited. Both her father and mother had well developed dental arches.

The fourteen permanent teeth were fully erupted, and the six anterior gone astray—the cuspids being wholly outside the arch, and the laterals and first bicuspids in contact—the left lateral was locked inside the inferior teeth half the length of its crown. Her teeth were well developed and entirely free from decay. The temporary incisors were not removed until after some of the permanent ones made their appearance; and soon after her dentist, becoming alarmed at their crowded condition, imagined he was doing the right thing, and removed the cuspids long before the first bicuspids were ready to seek the light of day, thus causing the irregularity he sought to prevent.

The teeth of the lower jaw are then described. On the right side the temporary cuspid was removed at the same time the superior ones were. The *right cuspid* was wholly outside the arch, this being caused by the premature removal of its predecessors.

Only a short time could be given to regulate the case; so the superior first bicuspids were extracted, and the second bicuspids expanded, and at the same time the cuspids started back, the left one was vigorously worked upon to get room to take the lateral out of its lock; when this was accomplished, a retaining plate was inserted to hold the bicuspids and lateral in their new positions, leaving the process of nature to carry the cuspids to the position left vacant by the removal of the first bicuspids. In the inferior jaw the right lateral was extracted, and with a rubber ligature he started the cuspid to its place. The patient was told to frequently press the cuspids back with the thumb and finger, as this would hurry them into place. This is carefully done, and when seen the first and only time, two years after, her refractory teeth were in line, and she was transformed into a beautiful woman.

Another case is related, that of a girl, aged 21. The left second bicuspid was wholly inside the arch, which was caused by the removal of the temporary molar before the eruption of the permanent first molar, causing it to come forward and take up all the space due to the second bicuspid; and the anterior teeth on this side are out of line more than one-sixteenth of an inch, a better showing than is common under such circumstances.

Dr. Keely emphasises the importance of retaining, at any cost, the temporary molars until after the first permanent molars are fully erupted.

Literary Notices and Selections.

DENTISTRY NOT A SPECIALTY IN MEDICINE.

By Norman W. Kingsley, D.D.S.

(*Continued from page* 189).

Since writing the foregoing, I am in receipt of a letter from a practising dentist, a graduade of medicine, and a professor in a dental college, who speaks from experiment and experience. He says :—

"My experience, as one of the founders of an institution of learning for the purpose of educating medical graduates to practise dentistry, has convinced me, against my will, that it is impossible to make skilful dentists, as a rule, from such material. A young man who would be a successful dentist must begin his study with his mind fixed, as far as possible, on his life-work. I am in favour of dentists studying medicine, but not engaging in medical study until after they become dentists. Oral surgery is a legitimate specialty of medicine ; not so with dentistry. Oral surgery is taught in all schools of medicine, but who knows of a medical college in which men are taught dentistry ? Dentistry, therefore, is not, nor can it ever be, a department of medicine, or a specialty of medicine in the sense that is ophthalmology, etc. This conclusion I have arrived at against my will. I have been forced to these convictions, and have abandoned a pet theory in consequence thereof ; and these conclusions are not founded on theory, but facts which have been established on the firm ground of an expensive and hard-earned experience."

My own convictions must be already foreshadowed ; dentists must be taught in dental schools, and dental schools must teach everything that a dentist needs to know which pertains to the practice of his profession. It is not a matter of any consequence whether such schools form a department in a university or maintain an independent organisation, so long as the student secures the best training to fit him for his professional career. The question of a preliminary education is fast settling itself. The position which a dentist is to assume through life, as a professional man, demands at least what is known as a good academic education, and the dental colleges of to-day are recognising this fact.

If I were to create a type which would be my ideal of a dentist, I would have him possessed of all the academical, classical and scientific knowledge that the world contains; and to crown it all, he should be a dentist. But such an idea is clearly chimerical. Life is too short, and the capacity of the human mind too limited, to make even an approach to it. Therefore, in the prescribed education of the dental student of to-day, only what is absolutely essential to make him master of his vocation is all that we have any right to require of him. After that, he may follow the bent of his natural tastes.

Let no man who may be disposed to criticise my opinions say that I am opposed to a thorough education; and more than all, I wish to disclaim any disrespect for, or any attempt to detract from, the value of a medical education. On the contrary, if any man feels that the study of and graduation in medicine is going to help him in the practice of dentistry, by all means encourage him. He cannot have too much knowledge, be it of medicine or of any other science. But if he be a dentist, and has obtained the degree of M.D. by graduation, let him not be vain enough to conceive that by its possession he has thus acquired skill superior to those who have not, and then flaunt his title in their faces with the Pharisaical air, "I am holier than thou."

I know many a dentist who, having obtained all the knowledge of his profession that the educational advantages of his times could give, and yet thirsting for a knowledge of cognate sciences, has, with the cares of a not very remunerative practice, nevertheless devoted all his spare hours, and eked from his scanty income the means to enable him to graduate in medicine. All honour to such men, I say. God bless them. The spirit which prompts them entitles them to a higher place than the acquirement of the degree ever gives them. But, while I am full of admiration for him who has earned his degree, I have equal contempt for the dentist who, without a medical education, succeeds in making himself so solid with the faculty of some medical college that they confer the degree upon him, and thereafter he plays the part of a sycophantic hanger-on to the outskirts of a profession which he could not by any possibility practise.

Another issue is being forced upon us and rapidly approaching a crisis. An International Medical Congress is announced to be held in this country, at Washington, in September, 1887, and dentists are asked to form a section of that Congress. I would not require a very astute observer to define, from my present discourse, what position on such a question I would be likely to take. As an independent profession, we have no business there. As dentists, we are out of place. A section of oral surgery is eminently proper, and if there are oral surgeons enough in the world who want a section all to themselves, by all means let them have it, but do not hitch dentistry on to the end of the tail of the medical kite to give it ballast for a higher flight. From more than one source have I heard this humiliating argument in its favour: "We ought to form this section because it will give us such an excellent opportunity to obtain recognition." Do those who talk about "recognition" in this connection realise what the word involves? In plain language it means that our condition heretofore has been one of inferiority and abasement; but by joining such a congress we shall immediately, by some sort of prestidigitation, be lifted into a very grand and influential place. Dentistry in America needs no recognition that a medical congress can give. The only recognition which we need is that from all classes of the community, cultured and uncultured, and all professions, law, theology and medicine alike; a recognition that we are what we pretend to be—a benefit and a necessity to the health and comfort of the community. Any other recognition from a medical congress, even if filled with compliments, would be empty as sounding brass. If we are strong enough to form a section which will be a credit to dentistry in America, we are strong enough to have, in the not far-off future, a whole congress all to ourselves, and when that day arrives the eyes of the whole world will be centred upon us. We shall not be swamped in the multitude of specialties in medicine, like the poor relations who are invited to the feast but find themselves sitting at the second table. Fortunate it was for posterity that Chapin A. Harris and his colleagues were denied admission to the medical colleges. They builded wiser than they knew. Dentistry, independent, has grown with a vigour unparalleled. Grafted upon the medical stock, and drawing its life, not from its own roots, but from the tainted juices of the parent tree, it would have been stunted and dwarfed beyond a possibility of redemption.

Dentistry has come to stay; not as a specialty, but as an honourable, dignified, learned, scientific, beneficent, and independent profession. If to-day all the medical colleges, together with the entire medical profession, were blotted out, the practice of dentistry would not be injured in the least, nor would humanity, suffering from diseases of the teeth, be one whit the less cared for.

Dental colleges have come to stay. The degree of D.D.S. has come to stay, and dental societies—of which this New England Society is no mean type—have come to stay. Dentistry will exist long ages after you and I are forgotten. Even in that day of Paradise regained—when medicine will be no more, because disease has been banished from off the earth, and dental surgery has become a past history (because decay of the teeth has been prevented)—prosthetic dentistry then, alone of all the beneficent professions, will survive to supply the losses incident to advancing years, a blessing and a comfort to the toothless aged.—*Independent Practitioner.*

ORAL DISEASE AND CASEOUS PHTHISIS.

By JOHN S. SMITH, D.D.S., of Lancaster, Pa.

MR. S., aged about twenty years, tall of stature, blue eyes, light complexion, light hair. Having graduated at the Mount Joy Soldiers' Orphans' School at the age of sixteen years, and for several years subsequently a member of the Reynolds Rifles, of Lancaster, Pa., Co. C., Eighth Regiment National Guard, of Pennsylvania, visited me in November, 1885, for consultation in regard to an ulcer on the right cheek, which had bothered him for over four months. His general health was poor; and besides the abscess, which was discharging on the face, he was bothered with a cough, principally at night, after lying down; he also complained of pain over the right side of the chest. The man had lost his body weight, and presented an anæmic appearance. He related to me the following history of his case:—

About one year before, in 1884, he suffered from chest trouble to some extent, but during the summer following he went to the country, and came back, feeling, as he said, like himself again, having gained considerably in weight. He resumed work again, as an employé in a cork factory in this city. On the occasion of the fall (1885) encampment of the National Guard at Mount Gretna, he reported with his company for inspection, and while there he had a severe and painful swelling on his right cheek. He reported to the surgeon in charge, and was told to open the gum-boil, which would soon appear on the gum. He suffered excruciating pain for some time, and as a last resort applied a salve, made of soap and sugar, to the cheek externally, which opened the abscess on the outside. The salve had the tendency to break up the integument of the cheek, and the parts became very much inflamed. Upon his arrival home, he placed himself under the care of a physician, who attended him for several months, with but little if any beneficial result.

I made a careful examination of the case, first removing a strip of adhesive plaster from the ulcer, which revealed an unsightly sore, about three-fourths by one-half inch above the border of the jaw and a little back and over the facial artery on the cheek. The ulcer was sunken, with loose skin hanging over the raw surface, which was much inflamed. In the centre a large sinus was discharging a thin watery fluid. Upon looking into the oral cavity, it was observed that the teeth of the lower jaw were large and crowded for room. The teeth were all in place, and apparently free from caries, with the exception of several which were slightly decayed, but not to affect their pulps. The wisdom teeth on both sides of the jaw were through the gums, but crowded well back on the ramus of the jaw. While the right side was abscessed externally, the left side around the wisdom tooth was also discharging pus within the cavity of the mouth. This being the general history of the case, the diagnosis was plain.

DIAGNOSIS.

To look at the oral disease from the dento-surgical standpoint, would indicate death of one or more pulps of the teeth. The teeth, by a careful examination under the usual tests, showed living pulps; we must, therefore, exclude pulpitis, and devitalised pulp. It has been noticed the teeth are crowded for room, and in the eruption of the third molars, the undue pressure exerted in their eruption caused inflammation of the periodental membrane, and resulting in suppuration and abscess, and necrosis of a portion of the external plate of the alveolar process.

The patient, being strumous, would still add fuel to the flame excited by the crowded condition of the teeth, and pulmonary trouble had sapped the system to some extent of its vitality, which would greatly interfere with nature to throw off the disease without the assistance of the proper remedies. As it was, the ulcerated face and jaw was slow to heal, even after the operation.

TREATMENT.

The removal of the wisdom tooth, which was not an easy matter to accomplish. The wisdom tooth on the left side was discharging pus around the socket, and as the bone was not diseased, nothing more was needed to effect a cure on that side. On the right side other treatment was indicated. Stimulating injections could now be forced through the fistula from the alveoli. Tincture of iodine and diluted carbolic acid were chiefly relied on, used alternately—every day for one week, the iodine being packed (full strength) on cotton wool in alveoli, until the line of demarcation was established. The dead bone was subsequently removed, and all spicula trimmed smooth by the aid of a rose-shaped bur and the dental engine. This completed the treatment within the oral cavity. Attention was now directed to the large ulcerated surface on the cheek, which was still raw and devoid of cuticle. The discharge from the sinus having ceased, the parts soon showed signs of healthy granulation, and with no other dressing than phenol sodique one-half strength during the first week, and subsequently diluted to one-twelfth its original strength, until the scar tissue was completed, which was in about eight weeks after the abscess ceased voiding. The cheek, at this time, was perfectly healed, having somewhat of a sunken or depressed appearance, but not nearly so much as was expected from the nature and extent of the break of continuity of the soft parts.

As the weather became inclement and changeable during the following January and February, the lung disease became more severe, the patient was unable to leave his room, except at short intervals, when the weather permitted, he ventured out for exercise. The walking would soon tire him, and he was glad to get back to his room. As the disease progressed, the symptoms became more aggravated. Night sweats and cough, fever, pains in the chest, and the usual characteristic expectoration, emaciation, but no diarrhœa. The appetite did not fail him until within a short time before the middle of February.

When treating the oral disease, I put the patient on a course of iron treatment, and subsequently the syrup of the hypophosphites was administered, which treatment apparently was beneficial. When the night sweats came on, the proper remedies were prescribed internally, as well as externally, by sponging the skin, which afforded relief.

In February, about the 12th, I suspended my visits, as the oral disease was cured, and he was having no more trouble from that source. I advised the family to call in a physician to take charge of the case, which they did. The patient, however, began to sink, and died in March, about four weeks afterwards, of caseous phthisis.—*Medical and Surgical Reporter.*

ON THE ABSORPTION OF DENTINE ; ITS RELATION TO THE PROCESS OF RE-IMPLANTATION AND TO DECAY OF THE TEETH.

By Prof. Miller.

Absorption of the roots of temporary teeth has been thoroughly and carefully studied, and I have made no attempt to repeat the investigations which have been made concerning the nature of this progress.

It appeared to me, however, that a study of the phenomena of absorption of dentine under conditions which exclude the possibility of the dentine itself taking any active part in the process might add something to our knowledge of this question, and possibly be of some use in determining the relation which this process bears to the fixation of reimplanted or transplanted teeth, and to decay of the teeth.

The experiments were performed upon rabbits ; the material, taken from the roots of teeth partly dry and partly fresh, was sawed into sections about one millimetre thick ; they were then washed in distilled water with 0·75 per cent. common salt. The dry sections were previously sterilised with absolute alcohol, but the fresh ones were not, the aim being to keep the pericementum as unchanged as possible. The rabbit was then placed upon its back, the hair removed from the abdomen for a space as large as a silver quarter of a dollar, the skin wiped with sublimate (1-1000), a slit about one-fourth of an inch long made through the wall of the abdomen, and two or three of the sections brought into the abdominal cavity with sterilised pliers. The cut was closed by a simple stitch and protected by a coating of iodoform-collodion. Six rabbits in all were treated in this way, and apparently suffered no inconvenience whatever from the operation. The rabbits were killed after periods varying from three weeks to three months.

In three weeks the pieces were found surrounded by a thick capsule of connective tissue, densely filled with round cells. The dentine was firmly enclosed and held in the capsule, but not attached to it. On decalcifying and making sections, the dentine separated from the connective tissue, leaving a hole in each section exactly corresponding to the size and shape of the cut of dentine.

In six weeks resorption had begun at nearly all points destitute of pericementum, whereas at those points covered by pericementum a perfectly firm union had taken place with the surrounding tissue, so that the dentine could not be removed without tearing the tissue. In this case, when sections were made, the dentine did not separate from the tissue of the capsule.

In no case did a firm attachment take place where the pericementun was not present, although a slight *pseudo*-attachment was produced by the bundles of connective tissue which filled up the irregular resorption spaces. It might be put down as a law for those who practise replanting and transplanting teeth : "Preserve the pericementum, for to that extent to which it is removed, to the same will the success and permanency of the operation be hazarded." For the same reason I am inclined to think that removing the point of the root, except it be diseased, is a mistake, and will result in resorption, advancing from the apex towards the base of the root. I have read many reports of teeth being replanted after they had been out of the mouth for hours, or even days, and in some cases lain in the dirt, and which became firmly attached again.

It is quite possible that any tooth may become fixed by a sort of encapsulation of the root, or by a pseudo-attachment, as mentioned above, but such a fixation can hardly be permanent, and I think experience will show that such teeth fall out in the course of a few weeks or months. It must be borne in mind that these conclusions are based solely upon the above experiments upon rabbits. They are, however, completely confirmed by the replantation experiments of Leo

Fedel,* made on dogs; also by the experiments of Morgenstern, and by my own examination of a tooth which was re-extracted two years after re-implantation.

The fixation of re-implanted or transplanted teeth may, therefore, be accomplished in three ways:

1. By simple encapsulation of the root. This mode of attachment is, I believe, frequently referred to in dental literature.

2. By the bundles of connective tissue which fill up the irregular absorption spaces, just as a very porous body might become attached to soft tissue by the latter growing into and through the interspaces. I have a number of specimens showing this mode of union, which I have called a pseudo-attachment.

3. By a direct union of the surrounding tissues with the *living* pericementum. This I am inclined to look upon as the only permanent attachment.

In all cases the resorption was characterised by the fewness of osteoclasts, the resorption apparently being carried on by the small round cells, which accumulated in immense numbers around each piece of dentine, so that in sections stained with picro-lithio-carmine the dentine appeared as a yellow spot surrounded by a deep red border. The opinion has been expressed that in this case the resorption was produced by osteoclasts which afterwards disappeared, giving place to fibrous tissue. The absorption took place in territories, giving rise to a ragged, scalloped border, such as is ordinarily met with in roots undergoing absorption. At the end of the third month only a trace of the dentine was to be found.

It seems scarcely necessary to state that there was not a trace of similarity between the process of absorption, as seen in the specimens under consideration, and decay of teeth, and indeed, it appears to me exceedingly doubtful whether we may under any circumstances at all, liken absorption to *caries dentium.*

The first process takes place only in the presence of, and under the action of, living tissue; the second process is carried on completely outside of an enveloping living tissue, and only under the action of certain external agents. In the first process we find a simultaneous disappearance of the organic and inorganic constituents of the dentine, giving rise to a hard, rough, ragged surface; in the second, the destruction of the non-organic constituents goes far in advance, leaving a soft mass, as unlike the surface of a root in absorption as it possibly could be. Nor is there anything in the advanced stages of caries which could for an instant be mistaken for absorption. As for the medullary elements, claimed by a few to appear in decaying dentine, we should use a much more positive and less negative evidence than has been thus far presented before we should be justified in accepting their existence.

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* Oesterreichisch-Ungarische Vierteljahrschrift, July, 1886.

It is usually stated that in absorption of dentine the lime-salts are first removed, the organic matter later. I do not know on what grounds such a statement is based. It is patent to every dentist that roots undergoing absorption do not become decalcified, but that the whole tissue disappears simultaneously. In the experiments under consideration, I was not able to detect a trace of decalcification, and I have furthermore found that pieces of dentine which have been reduced to the size of a very small pinhead by absorption still remain perfectly hard and undecalcified.—*Independent Practitioner.*

THE PERIOD OF PUBERTY AND THE TEETH.

By Daniel T. Nelson,

Retiring President of the Chicago Gynæcological Society, in his Address, speaks as follows about the Decay of Teeth at Puberty, Proper Developments of Sexual Organs. Mothers' Food, Tight Lacing, etc.

There is, I know, a law of compensation, whereby, if one organ or system of organs is disabled or over-worked, another will try to aid it to do its work, as the skin and alimentary canal when the kidneys are disabled, or the fingers and the ear when the eyes are useless; but these are conditions of disease, not health; of pathology, not physiology.

Tried by this law, then, what are the conditions necessary for the normal development of the reproductive organs? Plainly, the normal development and activity of all the other organs and system of organs, and conversely, the other systems of organs can only attain their highest functional activity when the sexual organs are perfectly developed. During the period of puberty, then, from 10 to 18 years, or more commonly from 12 to 16, do we ordinarily find the girls in our families possessed of an alimentary, glandular and vascular system sufficiently developed, and so normally active, that a healthy blood, containing in quantity and quality just the pabulum needed, is carried to each tissue? During these years of puberty which we are considering, the teeth begin to break down, in not a few instances, and as a result, digestion is impaired.

But why do the teeth so often decay in girls at puberty and during early married life? Why is it, for example, that the German, Swede and Norwegian girls who come to this country with model teeth, and the picture of health, unless we except the light complexion of the Scandinavians as hardly compatible with the most robust health—why is it that these girls live in our families but a few years before their teeth begin to decay, and they lose the fresh bloom of health which they brought from their native land? And then, if they marry and bear two or three children, they are almost a wreck; their teeth are so decayed as to be of no use for mastication. They are poor and feeble, pale and anæmic, old and haggard, but the shadow of their former selves; in the best possible condition to receive and develop almost any form of disease, tuberculosis and the like. Why this change? It is not simply the change in their habits of life and the climate, though these have doubtless had their influence; but I believe a far more important cause will be found in the quality of their food. The quantity of food they consume is probably greater than what they would get in the old country: but is the quality as appropriate for the nourishment and development of *all* the tissues? I believe not. For while the carbonaceous and albumenous foods are eaten in greater quantity, the *inorganic* is deficient, and here is an important source of weakness and decay, as I believe. The inorganic portion of the wheat is largely removed in the process of grinding, leaving only the starch and some of the gluten in the white flour which is eaten. While the brown bread from the coarser flour and from rye, which was formerly used largely in this country, and is still in most foreign countries, contained far more of the inorganic substances necessary for the development and nutrition of the bones, the teeth, and other important tissues, and as the result, the teeth erupted earlier, were better formed, and did not decay as readily; the bones were better developed, and all the tissues firmer.

During pregnancy, if the inorganic foods are not furnished the mother in sufficient quantity, the fœtus will even take it from the bones, and especially the teeth, of the mother; for all the tissues, the softest as well as the hardest, must have inorganic food; and while these resources of the mother are freely drawn upon, the difficiency may be so great that both the mother and child suffer for the want of them. But it is the rule that the mother will suffer first from the deficiency; her stomach will be disturbed, indigestion, heart-burn, and the like, and her teeth will decay and break away before the tissues of the fœtus will seem to suffer. But these symptoms may usually be readily relieved by giving the mother a sufficient quantity of the lime and magnesia salts—in other words, furnishing her with a sufficient quantity of inorganic food.

And the developing tissues of infancy and childhood need more food of all kinds, the inorganic included, than the simply working tissues of adult life. So during puberty the girls need more of this food for the proper development of the reproductive organs, a whole system of organs developing within a few years. To ensure, then, a normal development of the sexual organs at puberty, there must be a suitable supply of *all* kinds of food, and not the least, the inorganic.

Among our American girls there is another important cause of imperfect development, and consequently abnormal functional activity of the generative organs, in the *style of dress* now so nearly universal, consisting essentially of the tightly fitting *corset*, with equally tight outer clothing—for even if the corset may seem to be loose when first applied, and they are never acknowledged to be tight by the wearer—yet it must and does prevent the expansion and development of the lungs and muscles of the back and abdomen. It displaces the liver and stomach upward, and presses the abdominal viscera downward upon the pelvis, compressing these organs during the important period of their development, and laying the foundation for the congestions, the pelvic inflammations, the flexions, the displacements, and perhaps even the ovarian and fibroid tumours of later years. Among girls of foreign birth the corset is not generally put on until the changes of puberty are complete; consequently its evil effects are not seen as early, usually not until several years of menstrual life, or even after marriage. But our American girls are not *dressed* without the corset, even *before* puberty, so they have its evil effects during puberty, during menstrual life, and generally during the rest of their lives.

Not only does the corset prevent the devolopment of and displace the important organs of the thorax, abdomen and pelvis, but it, either alone, or with ingeniously contrived additions, is made to compress and prevent the development of the mammary glands, while it seems to enlarge them.

Dr. DeWolf tell us that statistics show that half of all the deaths are children under five years of age ; and that, while forty per cent. of all the babies born in the United States die in infancy, only eighteen per cent. die during the same period in Norway.

The chief reason for this frightful difference in the mortality is doubtless due to the fact that so many more mothers can nurse their children in Norway than in the United States ; for I will not believe that there are many mothers in any country *who will not* nurse their children when they can. Corroborating and explaining these statistics, is the statement that 10,000,000 of nursing bottles were made in this country during the last year. How many were exported and how many imported was not stated. Neither are we told how many *tons* of infants' foods were manufactured in the United States and imported during the same period. Surely, all must acknowledge that very many of our American mothers cannot nurse their children, or only for a very short period, and that this is one of the important causes producing this frightful mortality among our children. Have we explained in part the reason for this ? If so, the remedy is evident.

But so long as the corset is in favour, the gynecologist and the undertaker will thrive, and the wet nurse will be in demand.

But other systems are needed to complete the harmony necessary to the perfect development of the reproductive organs at puberty, beside the alimentary, the vascular, and the glandular. The muscular and nervous systems have most important functions to perform. Physiologists estimate that the voluntary muscles normally require from one-third to one quarter of all the blood for their nutritive and functional activity, and *vice versa*, healthy and active muscles are required for a normal blood, which shall be rich in the pabulum needed for the developing tissues. And here our American girls usually fail as puberty approaches ; their muscular exercise is restricted, they are confined within doors, and their time given to music, drawing, painting, and receiving friends, instead of the more active pursuits which would continue the development of the muscular system, while it aided alimentation ; or perhaps, what is worse, their time is devoted largely to study, thus calling into undue activity the nervous centres and so developing the whole nervous system that this is ever afterward the dominant system.—*Jour. Amer. Med. Association.*

Dental News.

PROVISION AGAINST ACCIDENT, SICKNESS, OLD AGE, AND DEATH.

THE quarterly meeting of the General and Executive Committee of the Medical (including dentists) Sickness, Annuity, and Life Assurance Society was held on Wednesday, January 19th, at 38, Wimpole Street, the Chairman, Mr. Ernest Hart, presiding. There were present—Dr. R. Lord, Mr. F. Wallace, Mr. Major Greenwood, jun., Mr. E. Bartlett, Dr. F. de Havilland Hall, Dr. J. W. Hunt, Dr. J. B. Brierley (Manchester), Mr. J. Brindley James, Mr. E. Noble Smith, and Dr. G. W. Crowe, (Worcester). Dr. W. M. Ord and Mr. T. Vincent Jackson (Wolverhampton) sent messages regretting they could not attend.

After the sickness claims had been reported by the Secretary, and examined, and several proposals for membership considered, the accounts were submitted, together with the auditors' report. These were accepted, and considered highly satisfactory. It was mentioned that the securities for investments (which are kept in a box at the Society's bankers') had been examined and verified by Mr. S. W. Sibly (one of the treasurers), Sir T. Spencer Wells (one of the trustees), and the auditors.

The report for the quarter, showing continued progress in the increase of reserves, and the number of members, and high financial prosperity, was then read, and, after a short discussion, received and adopted.

The progress of the Society during the past quarter had been of a steady and satisfactory character. There have been 28 new proposals received and though this is fewer than the exceptional number (43) last quarter, it is a little over recent averages, and compares favourably with the number (22) in the corresponding quarter of the previous year. Against the increase by new members must be set the loss of

1 member by death, of 1 by withdrawal, and the exclusion of 5 for non-payment, while 4 are at present under suspension for failure to pay the premium due on November 30th. The following is a short summary of the work of the various funds :

Sickness Fund.—To this fund there has been an income from members' payments of £1,122 12s. 2d., against £1,072 6s. 4d. in the preceding quarter, and an expenditure of £475 4s. for sickness pay, against £446 14s. Although the amount of sickness pay is more, there have been fewer members sick than in some previous quarters ; but several of the claims have been for very severe and prolonged illnesses. The sickness rate is, however, still well below the expectation under the tables, and has not absorbed one-half of the premium income, so that a very strong sickness reserve fund is being accumulated to meet future contingencies, the amount at the close of the quarter being £6,277 19s. 11d. Care has been taken properly to safeguard this fund by carefully examining every claim, and, where necessary, demanding full proof and certification.

Annuity Fund.—The annuity fund shows an income of £689, 12s. 2d. for the quarter, against £540 16s. 9d. in the preceding term, and, as the claims on this fund are of a deferred nature, there has been no expenditure, save allotting the stipulated proportion to the management fund. The increase in income is largely due to the success of the new rule enabling members to secure a return of premiums by an increase in payment. This has aroused a great deal of interest, and caused much correspondence, with the result that 53 members have already made the exchange, and a large number have agreed to do so from the current quarter.

Life Assurance Fund.—The life assurance fund has had an income of £219 6s. 2d., against £205 2s. 6d. in the preceding quarter, without any expenditure, save the deduction for management. This fund, though it continues small, seems to be working out well. At present its growth is restricted by the clause in the Friendly Societies' Act limiting the amount that may be assured to £200, and the fact that so many members had already arranged for their life assurance before the Society was founded.

Management Fund.—The income to the management fund has been £218 4s. 6d., against £205 14s. 6d. in the previous quarter, and the expenditure is only £94 4s. 7d., against £116 16s. 11d. It is a remarkably satisfactory feature that the expenditure does not, therefore, grow in proportion to the income, and this quarter less than half the 10 per cent. allowed has been used, the cost being reduced to less than 4½ per cent. Of course, correct deductions cannot be drawn from a single quarter, but the present balance in this fund of £1,196 10s. 6d. is tangible evidence of the result of the care of the Society with regard to its management expenses.

Invested Reserves.—The result of the quarter's work has been a net increase of 1,517 16s. 8d., against £1,393 in the previous quarter, the total worth now being a sum of £14,241 17s. 11d. an increase of £5,212 13s. 9d. for the year lately closed. During the quarter, a further investment has been made, £1,500 having been advanced to the Justices of the Peace of the County of Suffolk (Western Division) secured on the police rate of an area with a rateable value of over £600,000. This loan is repayable over a term of twenty years, and is at 3¾ per cent. interest. At the close of the year, and having regard to the bank-rate, a further sum of £1,500 was transferred to deposit, and is now earning a fair rate of interest, pending further investment. This reduced the unproductive capital of the Society—the necessary balance on current account—to £377 2s. 8d. at the close of the year, and as no interest is allotted to the management fund, the assurance funds were really at that, time and are now, in the exceptional position of receiving interest on a larger sum than their total reserves. The investment of a further sum was considered, and it was decided to advance £820 to the Local Board of Kettering, Northampton, for five years, and £600 to the Guardians of Barrow-on-Soar, Leicester, for thirty years, each on the security of the rates, and at 3¾ per cent. interest.

Full particulars, prospectuses, and proposal forms of this Society will be forwarded on application to the Secretary, Mr. C. J. Radley, 26, Wynne Road, Brixton, London, S.W.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

THE Annual General Meeting of the above Society was held at 40, Leicester Square, on Monday evening, January 17. The following gentlemen were elected as office-bearears for the year 1887:—

President—Frederick Canton, M.R.C.S., L.R.C.P., L.S.A., L.D.S.

Vice-Presidents—Herbert S. Parkinson, L.D.S.; H. Lloyd Williams, M.R.C.S., L.D.S.

Hon. Treasurer—Herbert Williams, L.D.S.

Hon. Secretaries—Walter J. England, L.D.S.; Charles F. Rilot, L.D.S.

Curator and Librarian—James F. Colyer.

Council-men—The following names were proposed at the last meeting for the vacancies on the Council. *Second year's students* (Five to be elected): R. Ackland, A. P. Carter, T. E. Constant, A. R. Colyer, C. R. Morley, H. Picton, T. S. Rendall, C. C. Robinson, G. Seymour. *First year's students* (Four to be elected). R. H. Bates, W. H. Dolamore, F. A. Harsant, H. W. Holford, W. A. Hooton, A. D. Horne, E. A. Manton, F. C. Porter, A. C. Pritchard.

NATIONAL DENTAL HOSPITAL.—The officers of the Students' Society of the above institution gave their second smoking concert this season on February 16, in the Banqueting Room of St. James's Hall, where over 300 gentlemen responded to their invitation. The programme contained many items of amusement, amongst which may be mentioned the "Straddleton Penny Readings" ; a musical sketch, by Mr. Dudley Causton ; a magical séance, by Mr. Percy Cooper ; banjo duetts, by Messrs. Tilley and Bond ; and buffo songs and duetts, by Messrs. Bruce-Smith and Joyner. The chair was taken by Mr. Henri Weiss, and with the able assistance of Mr. Chas. Glassington and Mr. Phillips, a most enjoyable evening was spent.

ODONTOLOGICAL SOCIETY.—The next meeting of the Odontological Society will take place at its rooms, 40, Leicester Square, on March 7th, at 8 p.m. Business—Casual Communications, by Messrs. A. Winterbottom, A. S. Unnderwood, F. Henri Weiss, F. Ackery, C. Vincent Cotterell and W. Harrison (Brighton). Paper by Dr. Dudley Buxton on the Physiological Action of Nitrous Oxide Gas.

WILLOUGHBY WEISS, *Hon Sec.*

PARTRIDGE *v.* MEDICAL COUNCIL.

THIS case was tried in the Queen's Bench Division, February 22, before Mr. Justice Denman and Mr. Justice Mathew.

Mr. Finlay, Q.C., moved for a rule for a writ of mandamus directed to the Medical Council and their registrar, ordering them to restore the name of Mr. Partridge to the register under the provisions of the Dentists' Act of 1878. The learned counsel said that the case raised a very short but somewhat important point under the Dentists' Act of 1878, and a point which had been the subject of considerable discussion in the Medical Council. The Act was the 41 and 42 Vict., cap. 33, and sec. 3 said that there should be a penalty upon any unregistered person who should act as a dentist; and sec. 6 said that any licentiate, and also any person who had previously been engaged in the practice of dental surgery, might be registered. To be registered in respect of the latter qualification, the person must have sent in information of his name and address before August 2, 1879. Mr. Partridge had been in practice as a dentist in London since 1867, and in 1878 he obtained a diploma in dental surgery from the Royal College of Surgeons, Dublin. He had, therefore, two qualifications for registration, and he, in fact, became registered directly after the passing of the Act as a licentiate in dental surgery. In 1885, however, the Dublin College of Surgeons withdrew his diploma, upon the ground that he had advertised in the course of his business as a dentist, and the diploma being withdrawn, the Medical Council removed his name from the register. The time had expired when he could become registered in respect of his other qualification. It was submitted to the Court that the Medical Council had no power to remove Mr. Partridge's name from the register for the cause assigned. The Act itself specified the causes for which the Council might remove a name from the register. They might erase any entry that had been incorrectly or fraudulently made ; where the person had been convicted of an offence which, if committed in England, would be a felony or misdemeanour; and where the person had been guilty of infamous or disgraceful conduct.

Mr. Justice Mathew: Mr. Partridge has merely committed the offence of advertising.

Mr. Finlay: Yes; for that the Dublin College withdrew his qualification, and thereupon his name was taken off the register. The Council surely had no power to do this.

Rule granted.

ANSWERS TO CORRESPONDENTS.

P. M. (*Bournemouth*).—We have communicated privately with you. See Vol. XXVIII., pp., 11-47, of this journal.

L. D. S.—We are powerless in these matters, and can only say, " Alas ! that such things can be." Charlatanism, puffing, and unprofessional conduct are connived at, if not promoted, by the public; and, until a very much higher range of education in physiology permeates through the middle classes, we can only hope the experience its members buy at the hands of quacks will cause them to warn their friends. We annotated on the place last issue; it is only one of many tricks set forward by the same firm to catch the unwary.

Secretary National Dental Hospital.—We drew attention to the admission of female students to your hospital some time ago, and have received several inquiries about it. We shall be happy to note the progress of the scheme.

Secretary Dental Hospital of London.—The announcement of the Commemoration Dinner has already been made through our columns. We have not as yet received a list of your stewards.

Mr. Fred. A. Bellamy.—The omission was noted in time, and corrected. Thanks for errata.

Edgar F. Briggs (London).—Much as we sympathise with the spirit of the resolution, we cannot see its direct, or even indirect, bearing upon the subjects our journal represents.

South Australia.—Your letter, although containing much of interest, is too full of personalities; there must be much pruning and excision of names if we are to publish it. If you will re-write, and avoid incriminating persons by name, and will write on *one side only* of the paper, we shall be happy to hear from you.

Enquirer.—We certainly meant *nett* profits. This is still in favour of the vendor.

Communications have been received from Messrs. Rouw, Palethorpe, Phillips, J. Dunn (Florence), Mr. J. S. Amoore, Secretary of the Minneapolis Dental Society, Secretary Students' Dental Society of London, enclosing Transactions, T. Fletcher (Warrington), W. Harrison (Brighton), Laurence (Ealing), F. H. Weiss, G. H. Dunell, A. Wilson, R. L. Whigham (London).

HOSPITAL REPORTS.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Jan. 1 to 31, 1887:—

Number of Patients attended		2413
Extractions	Children under 14	324
	Adults	757
	Under Nitrous Oxide	446
Gold Stoppings		295
Other Stoppings		783
Advice and Scaling		135
Irregularities of the Teeth		152
Miscellaneous		469
Total		3361

R. Wynne Rouw, *House Surgeon.*

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INAUGURAL ADDRESS.

By Charles Sissmore Tomes, M.R.C.S., L.D.S., F.R.S.,

Upon taking the Presidential Chair at the Odontological Society of Great Britain.

The task which custom has imposed upon each successive occupant of the Presidential Chair of this Society, is one which is beset with difficulties of a certain kind; difficulties, perhaps, hardly to be realised until they are encountered in the penning of an address.

For it would seem to be desirable to embody in it, if possible, something which has not been already said by one's predecessors, each of whom has thus narrowed the ground over which it might have been practicable to travel; something, too, which needs no lengthy nor detailed exposition, unsuited to the occasion, however well it might find place in a closely argued paper; a something, in fact, for which at this moment I look in vain.

In the wide field of Medicine and Surgery this difficulty hardly exists, for a Presidential address can almost always to good purpose concern itself with a retrospect of the progress which has been made in those directions in which thought has been most active during the preceding year; but within the sharply-defined limits of our specialty, though I hope that we always have progress to report, the advances have often been in the way of details, the enumeration of which would be tedious; and hence I am not disposed to adopt the time-honoured course of giving a *résumé* of the work of the year, or of a few antecedent years—not that I would for a moment set slight value upon such periodical stock-taking.

Moreover, a comfortable indulgence in a course of mutual congratulation, pleasant though it may be, is far from being a wholesome mental diet; it is a more fruitful task to seek for the weak places in our armour, if by so doing there is hope that they may be strengthened.

But if I have something to say in the way of criticism, so also there is much to be said in the way of apology for our shortcomings; and though perhaps to do so is to reverse the natural order of things, I will begin with the excuse before going on to the indictment. Year by year, in the modern practice of dentistry, we are able to do a little more for our patients; but our operations become longer and longer, so that it comes to pass that devoting, as we must do, hours to the treatment of each individual case, a very moderate amount of practice absorbs almost the whole of our time; whilst if we are fortunate in securing what may be termed a large practice, our time from early morning till evening is filled up with an absolute completeness which, while it may be experienced by a good many general practitioners, is unknown to all but a very few of the consultants.

And so it comes to pass that the conduct of practice is a daily burden almost too heavy for even a strong man's powers, and we are for ever struggling with a chronic lack of time, and with arrears which never get overtaken.

Add to this that our operations entail much fatigue: hours spent in constrained positions, striving with manipulative difficulties, which become more irksome as the day wears on, so that after work is done there is little energy left for devotion to any matter of serious study, and it is not hard to see why it is that research has fewer devotees amongst our ranks than we would fain have found.

And there is still another factor, a very real and potent factor too, which operates adversely to research, and that is the comparatively early period at which the more promising of the new recruits to our ranks secure a full employment of their time. For thus far the growing demand for skilled dental services, together with the increased consumption of time in the performance of dental operations, has brought it about that, with few exceptions, students who have distinguished themselves above their fellows have become associated with older practitioners; and so, getting into practice years before they could possibly have made a position for themselves in the eyes of the public, have lacked that period of enforced leisure which has proved so fruitful of good work amongst young medical men. Our calling, therefore, handicaps us, and that somewhat heavily, and each one of us experiences a disposition to fall into a very deep rut of daily routine, not far short of a machine-like automatic regularity in the performance of our daily duties.

But then it behoves us to look into it to see whether fate is altogether too strong for us, and if we cannot be saved from this form of mental deterioration ; and it appears to me that there are means of escape after all, if there be the energy to grasp them. Perhaps the most valuable preventive is to have a hobby, a worthy one if possible, but at all events some hobby outside the lines of our daily work. That, however, is beyond the scope of the few remarks appropriate to the present occasion.

But besides this, there is the necessity for approaching our work with thoroughly receptive minds, giving to it our very best powers, and striving to follow up every little clue, and to clear up every obscurity across which we stumble; if this be done, there will be countless interests springing up every day, which will be a refreshment, and not an added toil.

Perhaps to some this will seem a jeremiad for no cause ; but let me illustrate what I mean by an example. I remember once being told that the subject was played out, that there was nothing left to work out, nothing to write about ; but is it so ? Is there any single thing about which we can flatter ourselves that we know it completely ? Take the premature loss of the teeth—that disease which in its more acute form we call Pyorrhœa alveolaris, which every dentist is treating almost every day, for the most part with poor success. Do we know all about that ?—nay, more, do we know all that we could comparatively easily find out ? There can be but one answer : We do not ; though on both sides of the Atlantic reams of paper have been covered with *à priori* speculations and the like. To our shame be it said, we are in complete ignorance of the exact pathology of the disease, accessible though it be for study, and we treat it with a pure empiricism.

For my own part, I will confess that until stirred up into inquiry by the eminently suggestive papers of Mr. Bland Sutton—who has happily often been found amongst us, though, unfortunately for our credit, he is not one of us—I was totally unfamiliar with the appearances which may be seen by a mere naked eye examination of dry skulls. There is, so far as I know, no place in dental literature where these appearances are noted, and *à fortiori* no record of microscopic examination of the affected bones, by which we might learn how widely the morbid process goes; and it need hardly be said researches into the conditions of the soft parts involved are equally wanting.

In the pursuit of every branch of knowledge there comes a time when that which lies upon the surface, patent to casual intelligent observation, has been worked out, and when, for further progress, a closer and deeper investigation becomes essential. I venture to think that if that closer investigation, with the aid of modern methods of research, were applied to our special problems, a sufficiently rich harvest of results would reward the effort.

For so it has been in the wider field of Medicine and Surgery; the immense achievements of the antiseptic method have been the outcome of investigations into the nature of organisms which, but a few years ago, would have been deemed utterly outside the pale of the interests of the practical surgeon. So, too, in medicine; the nature of certain infective disorders, and the light thereby thrown upon others of which the history is as yet but incompletely known; the localisation of cerebral function, and the brilliant results which, with the aid of antiseptic surgery, have resulted therefrom—all these things have been arrived at by a closeness of investigation which has as yet hardly been brought to bear upon dental problems.

Another enticing field for enquiry, which in the nature of things does not admit of so much accuracy, lies in the question how far heredity plays a part in the genesis of dental irregularities, and of dental caries. There are some irregularities which are quite obviously the result of accidental circumstances in the individual; but leaving these out of consideration, there remain a vast number which *à priori* would seem to be quite as likely to be under the sway of a strict heredity as is the conformation of a nose, or of the lips.

It has been rather the habit to assume that dental irregularities are things of quite modern date; thus my friend Dr. Norman Kingsley (like Sir Crichton Browne and his headaches of School Board children) would fain persuade us that it is all the effect of disturbed innervation, the result of overpressure. But is this so? are irregularities so very recent? I am not at all prepared to say that we can diagnose with any certainty the existence of a dental irregularity from the appearance of the outside of the face; yet we can often make a good guess at it; as, for instance, when we see a child with open mouth and semi-idiotic look who is no idiot at all, we can guess pretty correctly that there is a contracted palate, enlarged tonsils, and maybe, too, a crop of adenoid growths in the pharynx. So if you look round the walls of the Grosvenor Gallery at the present time, where in a splendid series of portraits the unerring brush of Vandyke has handed down to us the faces of many of the cavaliers, we shall feel pretty confident that amongst them several were underhung, that one at least had protrusion of the upper incisors, and that two presented that excessive depth of the front of the lower jaw which is accompanied with much obliquity of the ascending ramus.

So, too, at the Old Masters' Exhibition at the Royal Academy, there are faces from which similar deductions may be drawn, and there is left upon one's mind a feeling that the mouths and lower jaws of the cavalier classes at that date were coarser than those which would be found to prevail were we to look at the faces of persons in a corresponding class of society nowadays.

Old family portraits are of much interest looked at in this connection. I am acquainted with one family in which, with rare exceptions, the mouth is very small and the jaws contracted and V-shaped to such an extent that it is plainly discernible upon the outside of the face. Now this appearance, forming a conspicuous part of the very marked family likeness which distinguishes them all, is clearly visible in the family portraits for many generations back.

If we stop to think what this implies it is the more remarkable, for the family portraits, the name, and the titles have of course gone down by the male side only, and we have an irregularity handed down for generations hardly weakened, although there have been other influences repeatedly introduced by marriages with various other families.

I have in mind another instance where the children reproduce an apparently slight character in the father's teeth, hardly, if at all, weakened by the infusion of another strain upon the mother's side. On the other hand, I know an instance of a girl's mouth being an exact copy of her mother's, the resemblance extending to such points as the disposition of the rugæ, and the grooved prominence in the median line of the palate; there is a strong facial likeness, and here the father's influence seems not to be traceable.

It may be that the terms of the problem are so complex as to altogether elude inquiry, but nevertheless it appears to me that a close observation of the mouths of children of large families, taken in conjunction with their parents, might not improbably throw a little light upon vastly wider questions of inheritance; at all events, it is ground hardly explored, and there is here room for what Professor Tyndall has happily termed the scientific use of the imagination, in furnishing us with a working hypothesis, if with nothing more.

Hence one may be allowed to speculate a little upon matters which do not admit of more accurate proof, always provided that one is not thus led into mere speculation where more solid ground is accessible to us. One thing which has often struck every one who looks much at old portraits, is that the type of face which is held to be beautiful at one period is not that which is held to be so at another; the beauties of King Charles's day are not like those of the Georgian era, and neither again would be considered great beauties now-a-days. There is a fashion in beauty as in other things, and the tendency of late years seems to have been in the direction of the appreciation of a tapering form of face, in which the mouth and lower jaw are not pronounced to the full; the full mouths and somewhat heavy lower part of the face of Charles' favourites would disqualify many of them somewhat from a place in a modern book of beauty.

I need hardly remind my hearers how largely the contours of the superior and inferior maxillary bones model the face, so that if there be a general facial resemblance this will have been largely contributed to by resemblance in the form of these bones. And if dental irregularities go hand in hand, as I believe they very commonly do, with modifications of the maxillæ affecting a great deal more than the immediate alveolar borders, then coincidently with the transmission of facial peculiarities we may expect to find transmission of dental irregularities.

The question of how far the child is demonstrably a mean product, sharing the peculiarities of its parents, but bringing to light again tendencies inherited from more remote ancestors, is one of the greatest interest, and it seems possible that things which admit of measurement and of reproduction in the way of casts, such as we have in the jaws and teeth, might throw some light upon it; even if the results were quite negative, that in itself would be an important basis of fact from which to study the matter in other aspects.

And it must not for a moment be supposed that it is a simple question, or that Nature yields up her secrets to casual questioners ; for in every individual many strains of blood unite, and may be expected to assert themselves to varying extents. Nor can we expect to be able to obtain a complete series of models from any one family ; as a friend suggested, the only satisfactory thing would be to obtain access to the family vaults of some stock presenting marked dental peculiarities.

With the material at present to hand we can only say that in the matter of teeth children may closely mimic either the one parent or the other ; this of course we frequently see in the matter of general likeness, save only that in the teeth it is, so to speak, more measurable. Then, too, they may sometimes present a sort of blend ; or some members may follow the one, and others the other parent ; or, again, they may present characters not at first sight referable to either parent ; it is this last which would seem to present the most fruitful field for enquiry.

Some years ago Mr. Francis Galton devised an ingenious method of, so to speak, striking an average of a number of faces, and bringing into prominence the points of resemblance by the help of photography.

If, for example, he wished to deal with five faces of members of the same family, he took the five photographs (which must roughly correspond in size and in the view of the face selected, whether full face, profile, three-quarter face, or what not) and arranged that they should in succession occupy the same spot upon a screen. Then he took a sensitised plate, requiring say five seconds' exposure in order to give a good image, and exposed upon it in succession the five photographs for one second each ; in the aggregate then the plate had been sufficiently exposed, but each individual photograph had received only a fifth of its proper exposure, and so a thing which occurred upon one only would have been so underexposed as to leave no appreciable mark upon the negative. On the other hand, that which was common to all would be amply strong, and so his method eliminated that which was peculiar to one or two. Treating photographs of members of our Royal Family in this way, he obtained a "composite" Guelph face, which, whilst it was unmistakably a Guelph, yet represented no known member of the family.

The composite thus obtained is then a generalisation of the points of community. Is it at all possible that we might in some such way combine the characters of the dentitions of a number of the same family and thus arrive at a generalised family type of jaw? Of course this is mere conjecture, a mere hint thrown out, which may prove to be worthless or worse, and I shall lay myself open to the reproach of that making bricks without straw which in the opening of my address I condemned. But it is only on such opportunities as an opening address that there is a chance of airing undigested notions, so I must plead this in extenuation of my inconsistency. It is perhaps also conceivable, to go on in the same strain of conjecture, that the popular idea of beauty for the time being may have something to do with the modification of the form of the jaws, at all events in particular classes of society. For it is very certain that the majority of people may be and are led in such matters; that we, in point of fact, learn to admire that which we are persistently told to admire as being really beautiful; and so popular pictures, periodicals, and the like may do much to inculcate a taste for a particular type. Now if you look round the walls of a picture gallery, if you turn over the pages of *Punch*, or look in the shop windows at the photographs of the professional beauties, you will, I think, be struck with the fact that the small-jawed type is the one now in vogue, and every man who, swayed by this unconscious prepossession in favour of this type, admires and then marries a damsel of this type, has done something towards its intensification. Perhaps this idea is far-fetched, but it seems to have some residuum of possibility about it, even if it does not admit of being pressed very far.

It is a fact unfortunately only too familiar that bad teeth run in families, and this with sufficient constancy to force it upon the attention of the public. And this bad quality of tooth, which renders it almost certain to be attacked by caries early in the life of its possessor, is not by any means always associated with a low standard of general health.

It would be equally conceivable that defective tooth formation might be due to malnutrition in the individual during the period of active tooth-building, or to an inherited tendency; but in seeking to learn which is the more probable hypothesis there are one or two collateral facts which may help us.

There seems to be a certain fixity of type about teeth which renders them a little less susceptible to stunting, starving influences than the bones which support them; thus in rickets, although the maxillæ are stunted, the teeth are often full-sized; again, in short-muzzled dogs, the reduction in the length of the bones has not brought about a corresponding reduction in the teeth, so that these come to be crowded—a fact analogous to this being every day observed in the mouths of our patients.

Though it is difficult to describe in words the different grades or qualities of teeth with which we meet, yet we recognise with certainty by the eye those stoutly-built, dense-looking yellowish teeth which possess such great resistant powers: and on the other hand there is a sufficiently distinct type of greyish or bluish tooth, generally very translucent, which experience tells us is of very poor quality; whilst between these extremes are several sufficiently distinct types

Upon the whole the colour of a tooth is not a bad index of its quality, any approximation to a greyish or greenish hue—in fact, to cold colouring—being of bad import.

Now we find that quite trivial peculiarities in the teeth, such as the dwarfing of a lateral incisor, are inherited with great frequency; we find, too, that complexion, colour of hair, etc., and a vast number of other points, are accurately transmitted, so why not quality of teeth? There being thus no *à priori* improbability in a type of tooth being inherited, it would be well worth while to investigate the question whether the health of the growing individual or heredity has most to do with determining the quality of the tooth substance; and, as most of us have whole families passing under our notice, the difficulties of obtaining data are not great.

The easiest and most certain method of recording observations is to use a "string of shades," such as Messrs. Ash sell for matching colours of artificial teeth, only the teeth upon it should be selected with reference to their representing typical strong and weak teeth, and each slip stamped with a distinctive letter. With a very trifling expenditure of time, the type of teeth presented by the father and the mother could be recorded, as well as those of the children; it would soon appear whether there was or was not any relation between them, and a negative result would by no means be without its value, for it would render more hopeful the prospect of influencing the teeth of a growing child by diet and general hygiene.

One may remark, in passing, that although the temporary teeth are, so far as appearances go, almost always of good quality, this fact does not at all militate against the permanent teeth being under the strict influence of heredity; for other race peculiarities, such as family likeness, etc., only develop themselves later on in the life of the individual, and sometimes even quite in advanced life.

Thanking you alike for the honour which you have conferred upon me in placing me in the Chair of this Society—a Chair which has been occupied by so many whom I cannot hope to emulate—and for the patience with which you have listened to this congeries of inadequately considered and imperfectly expressed conjectures, I can only hope that during my Presidency our meetings may be profitable and interesting, and if they fail to do so, it shall not be from want of endeavour upon my part.

ON THE FALLING OUT OF TEETH IN TABES DORSALIS.

By W. Hale White, M.D., *Assistant Physician to Guy's Hospital.*

At the meeting of the Pathological Society, Feb. 15, 1887, I related the case of a man, æt. 40, who had had the first symptoms of Tabes Dorsalis eight years ago; a year ago the ataxy came on, and nine months ago the lightening pains. On admission into Guy's Hospital, we found the taste to be impaired, there was anæsthesia in various parts of the body, and a girdle pain; all the reflexes were absent, there was loss of sexual power, and some diarrhœa. He showed me a wisdom tooth which had, he said, simply fallen out two years ago. It appeared quite healthy. The other teeth were ground down, otherwise they were healthy: nothing wrong was noticeable with the jaw. The patient left the hospital somewhat improved; he had been treated with large doses of iodide of potassium. Rechardière (Rev. de Méd, No. 2, 1886, p. 170) has related the case of a patient suffering from Tabes. The mouth and face one day swelled, all the teeth of the upper jaw fell out one by one, without any previous caries; after this, a few pieces of bone came away from the palate.

Hoffmann (Berl Klin Wochensch, No. 12, 1885) mentions a man in whom all the teeth fell out of the upper jaw without any apparent cause, and a year after Tabes Dorsalis showed itself. Dr. Lewis (Amer. Journ. Nerv. and Ment. Dis., No. 2, 1885) also gives cases. My object in bringing the question forward, is to make it known that it has been asserted that teeth will fall out in Tabes Dorsalis more than normally, in order that the attention of those who have special opportunities for observation may be directed to the subject.

CASUAL COMMUNICATIONS.*

MR. STORER BENNETT read the following notes of a case of deep-seated abscess in the neck, probably due to a misplaced and unerupted tooth :—

"I beg, Sir, to offer for the acceptance of the Society the second and third right lower molars removed from a patient aged seventeen, who was suffering from a deep-seated abscess in the neck.

"The patient, W. A., an anæmic-looking youth, who was said to have suffered from enlarged glands two or three years ago, was admitted to the Middlesex Hospital, under Mr. Henry Morris, on December 21st, 1886. He stated that about a fortnight previously he had noticed a lump the size of a hazel nut at the lower part of the right side of his neck, in a line with the sterno-mastoid muscle; it gradually increased in size, but caused no pain, but eventually the face swelled, the lump becoming the size of an egg, and excessively painful.

"Mr. Morris requested me to see the patient, and on examination the neck presented a nodular swelling reaching from the right clavicle upwards to the lower border of the inferior maxilla, and conveyed a sensation of heat to the hand when placed upon it ; it was very tender to the touch, and indistinct fluctuation was detected on palpitation. The face was turned to the left side, and any attempt to restore it to its normal position caused great pain, the sterno-mastoid being rigidly contracted. His temperature registered 101°.

"Inside the mouth the separated roots of the first right lower molar were found to be slightly tender on pressure, but the second lower molar, much decayed, was extremely painful when pressed upon. The wisdom tooth was absent, and no signs of its imminent eruption noticed, the gum over it being normal in appearance and sensation. Pressing with the fingers on the gums around gave but little pain, the sulcus between the gum and cheek being scarcely swollen ; in fact, although the second lower molar was extremely painful when pressed on, as though the periosteum were inflamed, there was an absence of the usual signs of alveolar abscess, and it seemed scarcely likely the swelling in the neck had its origin in dental disturbance.

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* Contributed to the Odontological Society of Great Britain.

"The roots of the first and second molars were removed, but no pus appeared in the sockets of either, and an attempt being made to evacuate the pus by forcing a probe through the socket of the second molar yielded a perfectly negative result.

"My colleague, Mr. Hern, however, drew my attention to a nodule of enamel which slightly protruded through the septum of bone between the second and third molar, and which was evidently a part of the crown of the unerupted wisdom tooth. On this being carefully examined, I found that a probe could be passed both above and below the crown without at any part coming in contact with a root. The conclusion we arrived at was that the wisdom tooth was lying horizontally, with the masticating surface pointing forwards, one of the cusps having protruded through the septum between it and the second molar, and against the posterior surface of which it had impinged. On examining the second molar more carefully, a small pit was noticed on the distal root, the result probably of pressure of this misplaced wisdom tooth.

"In the afternoon the patient was conveyed to the operating theatre, as Mr. Morris intended to lay open the abscess, and at his request I made another examination after ether had been administered, and, having satisfied myself of the correctness of our opinion regarding the position of the tooth, made an incision over it, and readily raised it from its socket by means of an elevator. Mr. Morris introduced a trocar and grooved canula into the swelling in the neck in a direction upwards and backwards, and freely enlarging the opening, gave vent to a quantity of thick, creamy pus. On subsequently exploring the wound, a probe could be passed up nearly to the gum.

"On the following morning patient's temperature was 103°, but it fell to normal on the succeeding day, and his recovery was uninterrupted until January 20th, four weeks after the operation, when he began to complain of pain on the left side of his neck, and his face became swollen. In the evening, the first left lower molar was removed by the House Surgeon, and on the following day Mr. Hern extracted the next molar to it, which, though carious, was less so than the one on the opposite side. From this time all pain in the neck disappeared, and he was soon pronounced convalescent.

"I subsequently examined the socket of the second left lower molar, and could detect the wisdom tooth by passing a probe backwards through the alveolar septum, but it appeared to be occupying its normal position.

"Granting that the abscess on the right side of the neck *was* due to the teeth, this case appears interesting—

"*Firstly*, from the swelling being almost exclusively confined to the neck, the usual symptoms of alveolar abscess being but very slight, and

"*Secondly*, the non-evacuation of pus on removing any of the teeth, for none appeared even on extracting the wisdom.

"Should it be objected, however, that cause and effect have not been satisfactorily connected, the case is still interesting from the mal-position of the wisdom tooth, and the coincidence (if it be nothing more) of the abscess in the neck on the same side.

"Had the patient presented himself for treatment when the swelling was first noticed, it could, in all probability, have been cut short by extracting the second molar, as Mr. Hern eventually did when the abscess appeared on the opposite side."

Mr. Walter Coffin exhibited and explained the action of a little instrument designed by M. Rosenthal, of Liège, for the treatment of alveolar abscess. It consisted of a tube fitted at one end with a fine nozzle, and at the other with a rubber connection for attachment to a saliva ejector. To the lower part of this tube is attached another, a three-way cock or valve being placed at the point of junction. The end of this branch tube being placed in some antiseptic solution, the cock is turned so as to connect it with the saliva ejector by which the fluid is drawn up into the tube, completely filling it. The point of the nozzle being thrust into the abscess cavity, the cock is turned so as to connect it with the ejector, and part of the contents of the abscess is drawn into the tube. By turning the cock a little further, communication is opened between the abscess cavity, in which there is now a partial vacuum, and the antiseptic solution, which is thus drawn into the sac. This is again, by a turn of the cock, withdrawn, mixed with pus, into the ejector, and this operation is rapidly repeated until the contents of the abscess have been more or less completely removed. The saliva ejector should be able to produce a vacuum equal to six or seven inches of mercury, and it was a good plan to place a small piece of adhesive wax on the gum over the seat of the abscess and perforate through this. If any fistulous openings existed they must be closed.

Mr. Coffin also showed for Mr. C. J. Noble a model of the upper jaw of a woman with four molars on one side.

Dr. Walker said he had used M. Rosenthal's instrument about half-a-dozen times during the past month, and had been very pleased with it. He found that his saliva ejector worked it perfectly. It would, however, be an improvement if the lower tube were made somewhat longer.

Mr. F. Canton read the following extract from a letter received by Sir John Tomes from Mr. Chas. James Fox, a former member of the Society, and showed the tooth referred to by the writer. The letter was dated from Muskoka, Ontario, Canada.

"The enclosed tooth was given to me by a young lumberman, who brought it from an ancient Indian burying ground on the banks of the French River, near Lake Nipissing, about 150 miles further north than I am. I know the lad well, and know him to be an honest, truthful fellow. He took it from a skull lying by what had been an Indian burial scaffold. As you doubtless know, they do not bury, but wrapping up the corpse in its buffalo robe, rest it on a frame supported by sticks. The reason I begged for the tooth was because I fancied that it was a specimen of erosion, and I remarked, 'Some of the dentists in the Old Country maintain that this erosion is due to the use of the tooth-brush; here certainly is a tooth that never saw a tooth-brush.' I have never heard of the North American Indians cleaning their teeth, as many natives of the East Indies do. If the tooth illustrates anything, let the Odontological Society's Museum have it, or put it in the fire."

Mr. Mummery thought, from the naked-eye appearance, that the disease was more like superficial caries than true erosion.

Mr. C. D. Davis showed models of the mouth of a girl, aged thirteen, with the following dentition:—In the lower jaw two incisors and the second bicuspid were absent; there was no history of the extraction of any permanent teeth, and no evidence of the presence of the missing teeth beneath the gum. In the upper jaw the left temporary lateral and both temporary canines were standing, and there was no positive indication of the presence of the permanent laterals or canines in the jaw.

The models were taken in March, 1886, but the patient was seen on the 4th inst., and there was no marked alteration in the mouth.

Mr. Davis also showed a model of the upper jaw of a young lady, aged twenty, with the temporary lateral incisors and canines still present, and the right permanent canine in line between the temporary canine and the first bicuspid.

Mr. Willoughby Weiss showed a model of the upper jaw of a youth, aged twenty, in which the temporary canines were retained, whilst the permanent canines occupied the place of the permanent laterals, which were absent.

Mr. L. Matheson made a short communication respecting the capabilities of the Tauber Hydraulic Press, exhibited at the November meeting of the Society. He could not offer as complete a report as he should like, because he had not been in possession of the machine long enough to test it in such a number and variety of cases as would alone warrant him in making a full and trustworthy statement as to its powers. But he was under a promise to some of the members to speak on the subject, and he would therefore briefly state what his experience with the machine so far had been.

The object of the invention was to supersede the ordinary zinc and lead casts and dies in the making of metal dentures by the employment of hydraulic pressure, applied directly to the plate resting upon a cast of Spense metal—a curious compound which it is impossible to pour whilst molten into a Stent or gutta-percha impression, but which when cool is quite hard enough to bear a greater strain than zinc will stand.

Two claims were made for the machine. (1) That a great saving of time is effected by doing away with the necessity for the ordinary casts and dies. And (2) that a good fit is obtained with more ease and certainty than by the method now in use, owing to the principle of the appliance by which pressure is brought to bear *equally* on all parts.

Mr. Matheson's experience so far had been that in simple cases (an example of which shown) the first of these claims was fully justified. In more difficult cases, such as those in which teeth stood high out of the gums, he had found it necessary to use a zinc cast to bring the plate roughly into position. With regard to the second claim, he found that in the ease and certainty with which a fit was obtained, the press far surpassed the ordinary method. One important point which he wished to note was that when teeth or gums were overhanging it was as easy with this machine to obtain a fit as in more simple cases; and this without being obliged to make the accurate zinc casts, which were so difficult to obtain under these conditions.

Mr. Matheson's experiments so far had been made with five gold plates, with the accurate fit of which in the mouth he had been extremely pleased, and with a number of German silver plates which he had fitted to plaster models. He felt that further experience with the press was required before a fair judgment could be formed regarding its working as a whole, but he hoped before long to make further communication. He had, however, no hesitation in saying that he already looked upon the machine as a very valuable addition to his work-room appliances.

Mr. Matheson also showed a duct-compresser of Mr. Butcher's invention. It appeared to him to commend itself by its simplicity, lightness, and efficiency.

Mr. Robbins said that having been somewhat dissatisfied with the results obtained from the the ordinary methods of treating Pyorrhœa Alveolaris, he had read with great interest the paper by Mr. Whatford published with the August number of the Journal of the British Dental Association. Mr. Whatford appeared to speak very confidently of the results of his treatment by means of powdered sulphate of copper, and he (Mr. Robbins) felt a great desire to try it. In November an opportunity presented itself in the case of a lady, aged twenty-six, who had been in delicate health ever since an attack of rheumatic fever from which she suffered seven years ago. In March, 1884, she came to him to be treated for Riggs' disease. All the characteristic signs were present: spongy gums, gaping round the necks of the teeth, which were loose, and surrounded with tartar, purulent discharge, &c. He tried the ordinary treatment, removed the tartar and applied aromatic sulphuric acid round the necks of the teeth, and obtained a very fair result. The state of the mouth was very much improved, but the teeth never became quite firm. In November, 1885, the patient returned; the lower right central and lateral were now so loose that he removed them and put in a plate. The same treatment was repeated, and again some improvement followed. But in November last year she presented herself in a worse state than ever, and Mr. Robbins determined to try the sulphate of copper treatment. Two more of the lower front teeth were so loose that he had to hold them in whilst packing the sulphate round them. He carefully removed the tartar and repeated the packing, and at the third visit a decided improvement was perceptible, and by December 2nd, the patient appeared almost cured. But a relapse occurred, and on December 21st he was obliged to resume the treatment, this time with very satisfactory results, for the teeth were now in a far better state than they were two years ago. He knew that it was impossible to judge of the value of a method of treatment from one case, but he thought that there was something in this method of Mr. Whatford's, and he hoped that others would try it.

Dr. Field said he had never used the method referred to by Mr. Robbins, but he had used aromatic sulphuric acid for some years, and had obtained good results from it. He doubted, however, the possibility of curing a case of true Riggs' disease. The symptoms might be palliated and the teeth retained for years, but he had never seen a case of true Riggs' disease cured. In treating this disease it was most important to get the conscientious assistance of the patient; they were generally very negligent. It was also important to thoroughly remove the tartar and to inject the acid deeply.

Mr. Ashley Gibbons remarked that if the subject was to be fully discussed it would require an evening to itself. He would only state that he could confirm what Mr. Robbins had said as to the good effects of sulphate of copper. He had used it in two or three cases with most encouraging results. In one of these cases aromatic sulphuric acid had been tried and had failed, but after six applications of the powdered sulphate the patient was almost cured.

Mr. F. J. Bennett said the subject was well worth discussing, but it was obviously impossible to do so that evening. He hoped some member might be induced to bring it forward in a paper. He proposed the adjournment of the discussion to a future meeting.

This having been agreed to, the President proceeded to deliver his Inaugural Address.

CONCERNING NITROUS OXIDE GAS.

By Thomas G. O'Neill, London.

Since the introduction of nitrous oxide as an anæsthetic agent into the realms formerly held in almost absolute sovereignty by chloroform, there is probably no other operative branch of dentistry which has remained so much the same, and which has seen less change about its surrounding requirements as the methods of administering nitrous oxide gas. Perhaps, with the exception of the bringing into use of a few additional taps and couplings, and also the blending together of ether and gas, it might be said that the practice of giving nitrous oxide remains, in regard to actual administration, pretty much the same as when it was first brought before the notice of the dental profession as an anæsthetic agent, and could rivet the attention, being likely to suit the purpose of the dentist, and enable him to divest his patients of those organs of mastication and adornment which had lost their usefulness or beauty, and could only be looked upon as obstacles, which his anxiety taxed every ingenuity to get rid of with the least suffering during and after operations entrusted to his care. When the gas had achieved its first success, so as to draw the power and attention of good men to its use, it is undeniable that the verdict among good operators, mostly habituated to rely on chloroform; was decidedly averse and unpropitious towards it, as being unreliable, of short duration in its anæsthetic action, etc. But this decision has received, at the hands of many eminent and skilful men, great modification—we must think well merited, when it is taken into consideration that the amount of work—when it is more than a trifling modicum—can be got through by its administration any number of times, day by day, until the whole is accomplished; or by its intermixture with ether, which so prolongs the insensibility that the work necessary may be effected with, let it be hoped, some immunity from danger as well as from pain.

Reviewing the science of dentistry—British or otherwise—as applying to any advancement made in the direction of the administration of the gas and its surrounding concomitants, a mediocrity will be seen in comparison with many other branches of dental art that have effected improvement with rapid and brilliant strides—dazzling, while assisting, their adopting children. Why this should be so it might be difficult to understand, although, without doubt, it is easily realised; for the profession, having gone over with hum-drum reiteration the statements about the first introduction of the gas, original discoverer, etc., with patient resignation, forgot to improve this, more than any other contrivance in our profession for the relief of that portion of suffering humanity sometimes nearly as much bereft of theirsenses as they trust soon to be of their molars.

As the gas originated from across the Atlantic—of course in America by practical use for dental operations at the time of first coming into notice as worthy of practice, the mode was developed, closing the nostrils with a spring clamp, and introducing a gag and mouth-tube into the mouth, holding the patient's lips together by means of the fingers for inhalation. Assuredly this style of proceeding possesses the advantage of leaving the surface of the face more free for examination during the different stages of anæsthesia, than the manner adopted of placing an inhaler over the nostrils, half of the nose itself, and great portion of the face, which much obscures and hides it from observation; in fact, the more nervous the administrator is, the less likely he is to like it. While in following out or adopting the preceding method of pushing the lips together, with the gag placed in the mouth, and clamping the nostrils for closure, many patients more especially children, are under the erroneous impression that undue liberties are being taken with the organs of speech and smell, and resent this accordingly.

To obviate this, and get over the difficulty, it is very evident that the inhaler should be made smaller and so shaped that the air pad will rest under the nostrils (a thing that has never been done before) instead of being placed muzzle-like over the nostrils, by which arrangement much of the face and nose becomes buried, or hidden, that might most advantageously be left open to view.

That this idea of having a smaller inhaler or face-piece would answer and possess the advantage of exposing more of the face, will be seen by taking one of the ordinary inhalers and experimentally placing the air pad under and against the nostrils, instead of above and over them, as usually done in its application, when it will be found that the nostrils are more easily plugged for the exclusion of atmospheric air than would be, perhaps, expected, whilst, by having a specially constructed smaller face-piece (or mouth-piece it might be more appropriately called), there is small room to gainsay the advantage accruing from its adoption. Another point —a thing which would be of much service, and of some consequence—is a gauge and index, a piece of apparatus, I believe, not usually supplied, which would denote the expenditure of amount of gas used, and which could be applied to the gas bottles, or to gasometers ; but the great majority of dentists prefer the gas in bottles. It would then be easy to tell precisely the quantity of gas taken during an operation without any reference to the bag as a guide, and any waste going on would thus be more perceptible.

Dwelling upon the fact that the English dentist is mostly accompanied by a medical man, in a number of cases also by a medical man who supplies the gas as well as gives it, it will be generally admitted that the medical man who has not made some especial study of the subject, or has not good experience in the matter, as a result of his scientific education, knows little about nitrous oxide as an anæsthetic ; and the skilled dentist, while accepting the welcome assistance in holding the face-piece, etc., will, through force of circumstances, depend pretty much upon his own knowledge chiefly for the manipulation and safety of his patient. There is no doubt, where a medical man has a full knowledge of the agent in question, and a proper amount of experience to warrant a reliance on him, that his presence is a boon to the dental operator with a case in hand where there are many things to attend to, and when time is valuable. The "bok"* will give its signal, and the helplessness of the patient will tell the practised eye that the time has arrived, and that things have been "pushed" to that extremity which the initiated avoid going beyond ; and if, during the time, the dental practitioner stands side by side (figuratively) with the "gas specialist," it will lighten the labour his oft-times many duties call forth.

In conclusion, it may be said that although there are not evident many signs of as much progress in this branch of dentistry as might be anticipated, when we look around and perceive the strides made in other directions, some forward movements will, it is hoped, be made before long. There is, assuredly, room for some improvements, and it may be that it is more from lack of close attention being diverted to the matter than the absolute want of brain power or constructive ingenuity which the development of any resources, hitherto hidden away, calls forth.

APPOINTMENT OF A NEW SECRETARY FOR THE BRITISH DENTAL ASSOCIATION.—At a recent meeting of the Representative Board of this Association, Mr. Morton Smale was elected to fill the vacancy created by the retirement of Mr. Frederick Canton. Mr. Morton Smale has already earned the goodwill and thanks of the profession by his labours as Dean of the London School of Dental Surgery. The selection of so highly esteemed a member of our profession cannot but give widespread satisfaction.

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* "Bok" refers to the bok given by a patient when the anæsthetic condition is nearly complete.

British Journal of Dental Science.

LONDON, MARCH 15, 1887.

COMMEMORATION DINNER OF THE DENTAL HOSPITAL OF LONDON.

It is no exaggeration when we say that the occasion of this dinner marks, as far as Great Britain is concerned, an epoch in dental politics. Sir James Paget, who represents the best and highest objects of the great surgical commonweal, also combines in himself the loving regard alike of our gracious Queen—to whom he has the honour to be Surgeon Extra-ordinary—his profession, and the public at large. How rarely do we find such an one beloved alike by his fellow-practitioners—and his lay friends and patients! It was, then, a singularly happy and propitious occurrence which placed Sir James Paget in the chair on the occasion of this commemoration dinner. The Dental Hospital of London represents the acting profession, not only in the metropolis, but throughout England and Wales; nor is its influence unimportant in Scotland, Ireland and that Greater Britain which daily becomes a more important factor in the future of the great Empire of the English-speaking nation. As was said, most aptly, by the Dean of the School, we have another hospital in London, but there is no rivalry or jealousy; both work alike for the common good of dentistry, and the necessitous who seek aid at the hospital doors. The London Dental Hospital being the older school, must necessarily hold a somewhat different position from its most valuable and esteemed colleague, and it may be said that what praise is lavished upon one institution, must apply with more or less truth to the other.

In the course of the chairman's speech in support of the toast doing honour to the Dental School of London, he pointed out how, almost within the space of one short life, dentistry had sprung from the most lowly calling to its present proud estate; from shaking hands with the blacksmith and carpenter, it had become the affiliated offshoot from surgery, and as such shared in prestige and social status. Dental hospitals confer such immense boons upon the suffering community of our indigent classes, that it is well they should be brought into contact with the outside public. Although the commemoration was strictly professional, yet it served a very useful end in permitting the many eminent physicians and surgeons who were present to maintain touch with the dental work. It is yet to be seen how far their influence will be exerted to extend this contact between the metropolitan Dental Schools and the public. There is no doubt that the outside world does not at all adequately appreciate the blessings which a skilled staff of dental surgeons, assisted by eager, earnest students, do day by day shower upon the necessitous. And yet, the immediate sufferers who seek for relief appear to have learnt the privileges those enjoy who obtain cards entitling them to treatment at the dental hospitals, for, month by month and year by year, the number of out-patients steadily increases. Under these circumstances, we are not surprised to find the complaint made by the school authorities that their work is hampered and delayed for want of room, and that they need a considerably wider area for the exercise of their useful exertions. It is proposed to enlarge the hospital, and so facilitate the work, which at present is sometimes almost brought to a stand for lack of space. Of course, one has to make certain allowances for the ephemeral character of after-dinner speaking; but even after discounting to the full the speeches made on Thursday last, at the Metropole Hotel, we are bound to submit that with the high opinion which the leading men in Medicine and Surgery hold concerning the practical good our dental schools in London are now achieving, there ought to be no difficulty in commemorating this year of Her gracious Majesty's Jubilee by a work more adequate to that end than a dinner, to wit, by the permanent enlargement and extension of the premises in Leicester Square.

We publish on another page a list of the members of the Dental Section of the International Congress. At present it seems to be a little uncertain which of us will attend the section. In our contemporary, the *British Medical Journal*, however, a list of distinguished physicians and surgeons is published, who have declared their intention of being present at the Congress. Considering the overwhelming pretensions of certain gentry who vaunt "American Dentistry" as their speciality, it would be well for English dentists who represent the English school, and who know of but two kinds of dentistry—a good and a bad—to make a point of attending in numbers, and revealing to our accomplished hosts that the English school of dentistry does not need to borrow methods or ill-digested theories, but has built up its practices upon the firm basis of accurate and careful pathological research.

The occasion is certainly one when the interests of the British public at large, as well as the dental profession, will be best served by strenuous advocacy by Englishmen of English views of dental pathology, English modes of combating dental disease, and English procedure in conservative dentistry in all its branches. The transactions of the Odontological Society of Great Britain amply *prove* how *large* an amount of elaborate and systematic work has been got through within the last decade or so, so that it seems that all that is needed is the stimulus to induce English dentists to take a position in the ensuing September meeting worthy of their past, their present and their future.

THE GERMICIDAL VALUE OF IODOFORM.—Messrs. Heyn and Rovsing, of Copenhagen, report that in order to test the value of Iodoform as a bacteriocide, they prepared solutions of iodoform in olive oil and serum, and having sterilised them, studied the effects of the solutions and of iodoform powder upon cultures of various bacterial organisms; they also experimented on rabbits by mixing inoculation fluids with iodoform. Their experience was that in no case did the presence of the iodoform interfere with the development of micro-organisms, so that they conclude that as an antiseptic its employment is useless. Further, they point out that if this conclusion be correct, iodoform might itself act as a carrier of pathogenic germs, and its unguarded use might lead to mischief. They therefore recommend that before using iodoform, which is valuable as a dressing on other grounds than as an antiseptic, it should be disinfected in corrosive sublimate solution.

LOCAL ANÆSTHETIC.—Dr. Kulp, of Davenport, Iowa, uses the following formula :—

℞ Olei Caryophill.
Olei Cinnamom.
Chloroformi, in equal parts.
Apply with cotton upon the gums.

TESTS FOR COCAINE.—The common test for Cocaine, depending upon the formation of a violet-red precipitate on the addition of solution of potassium permanganate, without any reduction of the permanganate—is too delicate, since the presence of even a minute quantity of amorphous alkaloid brings about a reduction. Mr. H. Maclagan recommends as a practically satisfactory test (*Amer. Drug.*,) to dissolve one grain of Cocaine hydrochlorate in about two fluid ounces of water, and add two drops of solution of ammonia. He states that, if the salt be pure, upon rubbing the sides or bottom of the containing vessels with a glass rod, well-marked striæ will appear where the rod has touched, followed by the formation of a flocculent precipitate, leaving the liquid clear and bright; but that if amorphous alkaloid be present, even in moderately small proportion, no striæ or precipitate will form, the liquid remaining milky for a long time, and presenting an oily appearance on the surface. Mr. Maclagan adds that the amorphous alkaloid may be partially separated from a contaminated sample of cocaine hydrochlorate by dissolving it in water and adding ammonia solution drop by drop until a flocculent precipitate begins to appear, when it will be found deposited in sticky masses on the glass and rod. This amorphous alkaloid, freed from colouring matter, is a clear, yellowish, transparent substance, resembling Canada balsam, but of firmer consistence, and its hydrochlorate forms a varnish-like mass that cannot be reduced to powder.

A Physician's Interests.—Dr. Syme says (and the remark applies to dentists, as well as to doctors) : "There are three ways you may try ; there are three interests you have to consider ; and it will depend upon the order in which you consider them how success will be measured out to you. The first interest is your own, and it may seem to you the greatest, while it is really the least. The second interest is truly greater, for it is the interest of your professional brothers ; but the last is the greatest of all, for it is the interest of your patient, and with that is eternally related the interest of the art you practise."

The Royal College of Physicians have resolved to establish a research laboratory, and have voted £1,000 to fit it up. A salary, not less than £200 a year, is to be paid to a superintendent, and £80 to an assistant. The laboratory is to be open to the members, fellows, and licentiates of the college. Therapeutics is amongst the subjects which may be studied in the laboratory.

The Functions of the Tonsils.—Dr. R. Hingston Fox, in the July issue of the *Journal of Anatomy and Physiology,* discusses the functions of the tonsils. These adenoid glands belong to the digestive and not to the respiratory function. They are not, the writer contends, to lubricate the fauces and aid in deglutition, as has been claimed. From their structure, which is similar to the solitary agminated glands in the intestine, he reasons that their function is absorbent. He says: "The function of the tonsil is connected with the stream of saliva which is poured over it, without cessation, day and night," absorbing from the saliva in the intervals of meals certain of its constituents which would be otherwise wasted. The adenoid tissue of which the tonsils are composed may be regarded as the birthplace of leucocytes. The materials, according to this theory, which might be wasted by the stomach, are intercepted by these glands, and made to minister to the growth of white cells. "Adenoid tissue everywhere is more largely developed in childhood, when not only nutrition but growth has to be provided for, than it is afterwards. And there is nothing surprising in the fact that these nurseries of young leucocytes (permit the fancy), planted here as it were by the riverside, and drawing their sustenance from the nutrient stream, should dwindle in later life, when the demand for white cells has become much less.

A VALUABLE DEODORANT.—Labarraque's solution is a valuable and convenient disinfectant, bleacher, etc. It is not properly appreciated, either by physicians or dentists. The active principle in the solution is a salt, called the hypochlorite of soda. Hypochlorous acid is composed of one equivalent each of chlorine and oxygen. These elements are both so highly electro-negative that they will not combine directly, and unless they are held together by combining the acid with a base, they separate spontaneously. Carbonic acid in the atmosphere and from other sources, takes the soda, and that sets free the hypochlorous acid, and the oxygen and chlorine separate; and these two powerful elements, in their active state, are the disinfecting and bleaching agents. Thus it does double duty, the two elements having equal power. When your patient has a very offensive breath, says the editor of the *Ohio State Journal*, under a pretence of making the operation less unpleasant, put a very few drops of it into peppermint water, or even into cold water, and let the patient use it as a gargle; and you will find you have done yourself a kindness. If your own perspiration is offensive, as may occur even with good care, a few drops of the solusion will at once destroy the odour. Some have trouble with their feet, some with their armpits. Scarcely any of these odours need trouble any one, if he has this solution on hand. But it is probable, by trying to make this more plain and clear, we can induce some to use it who have as yet treated it with neglect.

THE DEATH OF DR. BECLARD.—Prof. Jules Béclard died on Wednesday afternoon, February 9, at his residence in Paris, after an illness of short duration. The son of a well-known anatomist, deceased was born in Paris in 1818, and showed early disposition to follow his father's career. On obtaining the medical diploma, he chose the branch of physiology, and became *agrègè* of this science in 1844. From 1845 to 1859 he lectured on anatomy and physiology at the Paris Faculty of Medicine. He became a member of the Academy of Medicine in 1862, and its perpetual secretary in 1873. At his death he had been for more than four years the Dean—or President—of the Paris Faculty of Medicine. He contributed largely by his researches to the advancement of medical science. His most important work, probably, is his "Treatise on Human Physiology," a book now classical. He was also for years a contributor to the columns of the *Gazette Hebdomadaire* and the *Archives de Mèdicine.*

MEDICATED COTTON.—The following recipes, taken from the *Pacific Medical Record*, are very useful :—

Purified cotton wool is obtained by macerating the commercial article for ten minutes in benzol, then pressing out the liquid, and allowing the cotton-wool to dry by exposure to the air.

Salicylated Cotton.—This preparation consists of purified cotton-wool impregnated, with about 1-100 of its weight of salicylic acid. It has been found useful as an antiseptic agent in the dressing of wounds. In cases of amputation the patient has been kept without fever by the use of a salicylated cotton-wool dressing, which was only required to be renewed at the end of the week. The formula for the preparation is as follows : Purified cotton-wool, 100 parts ; salicylic acid, 10 parts ; rectified spirits, 100 parts ; glycerine, 1 part. Dissolve the salicylic acid in the rectified spirit ; add the glycerine to the solution ; saturate the cotton-wool with the liquid ; press out the superfluous liquid ; dry with the usual precautions, and keep in wide-mouthed bottles.

Boracic-acid Cotton.—To prepare this, the ingredients used are taken in these proportions: Purified cotton-wool, q. s.; boracic acid, 10 parts; water, 90 parts. Dissolve the boracic acid in the water at a temperature of 140° Fahr. (60° Centigrade); saturate the purified cotton-wool with this solution; press it, dry it, and preserve it in corked bottles having a very wide mouth.

Iodoform Cotton.—This preparation has come somewhat extensively into use during the last five or six years. It is best made in the following manner: It is necessary that each ingredient be taken very accurately according to the proportion given: Iodoform, 2 parts; ether, 10 parts; rectified spirit, 10 parts; glycerine, 10 parts; purified cotton-wool, 30 parts. Dissolve the iodoform in the mixture of the ether and spirit; add the glycerine to this solution, and saturate the cotton-wool with the liquid. Let it dry by exposure to the air. Draw the cotton out and keep it in glass stoppered bottles with a wide mouth, closing well, and placed in a dark, cool place.

Hæmostatic Cotton.—To prepare hæmostatic cotton, the purified cotton-wool is boiled in a solution of soda, and then plunged into a watery solution of perchloride iron.

About Cocaine.—Dr. C. H. Hughes, quoted by the *Southern Dental Journal*, makes the following sensible remarks: The truth about cocaine is that it is a tonic and stimulating exhilarant of some power in melancholia, mental depression, and nerve weariness. That it acts rapidly but much more evanescently than morphia. That excessively used, it intoxicates and converts melancholia into mania. That, given largely in the upright position, it is capable of inducing vertigo—whether, as Dujardin-Beaumetz thinks, by inducing anœmia is not proved. That, as an antidote to alcoholism and its effects, it is not equal to morphia. That it is not equal to morphia as a tonic in melancholia, or as a narcotic in certain states of nervous debility. That in equal doses it nauseates more certainly than morphia. That it is not antidote to meconophaggism, though beneficial, if judiciously used and timely abandoned. That it may be used with advantage, if carefully given, in the withdrawal of opium and the cure of the opium habit, as one of many substitutes, but cannot be alone relied upon. That it intoxicates some persons and poisons them. That its continuous use is difficult to break off. That it is probably capable of developing permanent madness, like similar intoxicants, as a few doses occasion temporary insanity. That it is a dangerous therapeutic toy, not to be used as a sensational plaything. That it will probably help to fill rather than deplete the asylums, inebriate and insane, if it should unfortunately come into as general use as the other intoxicants of its class. As an intoxicant it is more dangerous, if continuously given, than alcohol or opium, and more difficult to abandon.

THE SALIVA AND THE TEETH.—*Items of Interest* contends (1) That mineral acids do not produce caries ; that they only soften the fibres. (2) That there is nothing in measles or scarlet fever to destroy the teeth. (3) That acid dyspepsia is not usually a source of tooth decay. (4) That pregnancy is not ; that the popular theory that the growing fetus injuriously draws on the teeth and the general bony structure is nonsense. That in all these cases, it is the vitiated condition of the fluids of the mouth which produce caries.

IN answer to the question, "Why shouldn't the lime be taken from the surface of the tooth and into the blood by the saliva ?" it is urged, "there is no property in saliva capable of subtracting lime from the teeth. Healthy saliva admirably prepares food for digestion in the stomach, but what chemical property has it to dissolve lime from the teeth, when that lime is protected by the more than adamantine hardness of the cement enveloping it ? The idea that saliva is a powerful solvent is correct, but the popular impression that it is an acid solvent is incorrect. It is neutral or alkaline. It eminently protects the teeth, by neutralising and washing away the acids of fermentation, and by making them harmless by chemical combinations." Does our friend forget that the saliva becomes acid in disease, and that its weak alkalinity is usually over-ridden by the acids produced in fermentation of food debris.

DANGERS OF THE USE OF ICE.—Some local epidemics of typhoid fever and diarrhœa have been attributed to the use of natural ice from an infected source, and on a recent occasion the City Board of the city of Syracuse forbade ice cut from Onondaga Lake to be sold for any purpose which would bring it into contact with articles of food or drink. Resistance to this order led to an investigation by an expert, who reported that the lake was contaminated with sewage from the sewers of Syracuse, and that ice taken from it contained living bacteria of various kinds, and sewage matter equal to about ten per cent. of that present in the water from which it had been formed. Well may it be said, with several marks of admiration, "Death in the ice-pail!"

SALOL.—Mr. Norman Tate, F.C.S., finds salol is a very useful disinfectant. It was discovered by Professor Nancki, some three years ago, and Dr. Sahli and Mr. Levenstein experimented with it. Its preparation is described as follows:—(1) Heating salicylic acid and phenol, or naphthol with phosphorus pentachloride, or phosphorus oxychloride. (2) Melting the sodium or other metallic compounds of the salicylic acid and phenol or naphthol together, with phosphorus pentachloride and phosphorus oxychloride. (3) Treating with phosphorus pentachloride or phosphorus oxychloride the crude product of the reaction obtained in the manufacture of salicylic acid; and, as Mr. Levenstein points out, this last method is probably the most likely to produce the most economical results. The formula of salol, or salicylic phenol ether, or phenol salicylate, is given as

$$HO,C_6H_4CO,O_6H_5$$

METHOD OF APPLYING MENTHOL EXTERNALLY.—As the result of some experiments as to the solvent best suited for making a solution of menthol for outward application, Professor Remington gives the preference to oleic acid. The method of preparation recommended, is to heat two hundred grains of menthol with half a fluid ounce of oleic acid in a test tube; but he says there is no difficulty in obtaining a 70 per cent. solution.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

PATHOLOGICAL HEREDITY AND GOUTY TEETH.*

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

MOST transmissible diseases affect the tooth-germs—or other organs and tissues—in a particular way, so that characteristic effects are produced in the growing tooth which remain as a more or less permanent pathognomonic sign of the disease. Some of these signs can be recognised. Gout can be placed in this category also, and some other diseases, such as rachitis, scrofula, scorbutus, and tubercle, are being approached; but knowledge of the signs of these diseases is imperfect.

The writer insists upon the desirability of making observations and records about the effects of all diseases upon the development of the teeth; for only by systematic observation and extensive statistics can we extend our knowledge.

Quain defines gout as a "general or constitutional disease, probably depending upon the presence in the system of excess of uric acid, the complaint being, in fact, a manifestation of the lithic or uric acid diathesis. It may be hereditary or acquired, and is characterised ordinarily by a peculiar inflammation of the joints—*articular* or regular gout, attended with the deposit of urates in their structures, affecting usually and especially the smaller joints, beginning with the great toe. Similar deposits of urates may occur in other tissues in the course of time, and certain organs of the body are liable to become the seat of functional disorders or of pathological changes during the progress of the disease; this is *non-articular* or irregular gout.

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* Read before the American Dental Association, at Niagara Falls, August 5, 1886.

"Gout usually begins as an acute affection occurring in fits; but subsequently tends to become chronic and permanent, though presenting exacerbations from time to time. The gouty diathesis may, however, be present without giving rise to any joint affection or other evident organic mischief. It is now generally admitted that the morbific agent producing it is uric acid, which accumulates in the system in abnormal quantities, due to imperfect elimination by the kidneys or molecular destruction, and this excess produces gout. It exists as lithate or urate of soda, which is distributed by the circulation to all the tissues of the body. In health the amount of uric acid in the blood is so minute that it cannot be detected by ordinary tests; but in gouty persons it can readily be obtained from any and all the secretions and tissues, and can be crystallised from the blood serum during severe attacks of the disease. Deposits of the urates, especially soda, are formed in the joints and other structures, and gout is the only disease in which these deposits are formed, and which are sometimes thrown off through the skin.

"Gout is one of the most striking examples of an hereditary disease, and once established it may be transmitted for several generations, and is generally intensified in progress by the continuance of the pernicious habits which induced it, thereby becoming a permanent legacy. Garrod found that in more than half his cases hereditary taint could be traced distinctly. It sometimes happens that, when gout becomes developed *de novo* in an individual, children born previously to its appearance are free from it, and those born subsequently are liable to be affected. Hereditary influence may be so powerful that gout arises without any other cause whatever; but most commonly this is aided by the habits which first led to its development. The law of atavism sometimes also operates where a generation is missed, and the disease reappears subsequently. Should the predisposition be very powerful, the complaint may appear even in children, and the younger the subject who is attacked with gout the more likely is there to be an hereditary taint.

"The principal cause of gout *de novo* is excessive indulgence in nitrogenous foods and alcoholic drinks, and deficient exercise with indolent habits, and it is largely confined to the upper and luxurious classes in England.

"Gout is exceedingly rare under twenty years, unless strongly hereditary, and is rare before thirty, the majority of cases occurring between thirty-five and forty-five, usually appearing before fifty, and very rarely occurring after sixty. Males are more frequently the subjects than females, this being due to difference of habits, and also, according to some writers, to the eliminating effects of menstruation, for when it does appear in females it is usually after the cessation of this function. But when strongly hereditary, gout may appear in young females also.

"Gout must be distinguished from acute or chronic rheumatism or rheumatic arthritis, although it is a related disease. Rheumatism occurs in earlier life, and is common to both sexes."

Dr. Dyce Duckworth says: "In regard to the teeth in gout, the primary dentition is usually satisfactory, and not different from that of healthy children." The teeth of gouty patients are not (Dr. Duckworth thinks) subject to caries. Amongst three hundred hospital patients who were the subjects of inherited gout in varying degree, the teeth were remarkably strong, well enamelled, and free from decay. The teeth are unusually large and regular in the arthritic diathesis; the edges smooth in the permanent set, and not crenated. There is a tendency for one or more of the incisors in the lower jaw to be pushed forward. Children of this diathesis are apt to grind their teeth during sleep, and persist in the habit to adult life, when it is done with such force as to chip and break the enamel. The enamel is usually yellow—white teeth being uncommon—and the colour will deepen in time. They are vigorous and firmly planted, and extraction is difficult. The texture of the dental tissues is abnormally hard, yet the teeth are apt to wear down on the articulating faces. There is a disposition to tartar, which often collects in large quantities. Perfectly sound teeth are apt to be shed as age advances, as illustrated in several instances. Indeed, one case, a man of twenty-six, became prematurely edentulous, as did others. Mingled with other diatheses—syphilitic, scrofulous, tuberculous, rheumatic, etc.—the gouty habit presents corresponding peculiar phases.

Dr. Alfred Carpenter says: "The effects of the gouty diathesis do not show themselves so markedly upon the teeth in early life, as is the case with the syphilitic and tubercular states. It manifests itself in another way, and other tissues suffer more than the teeth, though caries is not uncommon.

He also thinks that the teeth of gouty children do decay early. This disease has its origin in fatty degeneration of the dental cells, and the subjects of it are especially liable to those peridental inflammations which ultimately lead to necrosis. Gouty persons also suffer from neuralgias and other conditions, which have their origin in a lithic acid diathesis, which is often accompanied by pain, which reflects itself upon every function of the body."

Dr. W. Stewart took casts of the teeth of eleven gouty patients. In all the teeth were thick and solid, and worn below the edges.

Mr. Fothergill said: "In these casts the teeth presented a resemblance to those descriptions that was unmistakable. They were all solid teeth. The wearing down was probably due to the presence of uric acid in the saliva." Mr. Sewill thought that, "while the teeth were not pathognomonic, they were sufficiently pronounced to form an aid in diagnosis."

Dr. Horatio Dorkin writes that "eight children, an entire family, whose father has frequent attacks of gout, acute and seemingly acquired, and the mother's mother and grandfather suffered from the same disease, grind their teeth incessantly at night, and have done so all their lives. They all cut their teeth at an early age, having had generally two, and some four, teeth at three months. In several of the children the teeth are worn. Some of them are also somnambulists and sleep-walkers. Most of them are nervous, and suffer from epistaxis. The two eldest have corneal ulcers. The teeth of all are characteristic."

Casts of the teeth of the case of gout are given, and it is noticed that the characteristics are pronounced. The teeth are short, thick in all directions, with heavy shoulders upon the lingual sides, and all very dark, solid, square, dense and hard. The markings consist of traverse or encircling grooves or terraces, which give the teeth a step-like appearance. These grooves are perhaps characteristic, and are not to be confused with various kinds of grooves which mark the teeth affected by retarded development from different causes. The gums are light and thin, and present thin margins against the crown.

But it is only the anterior teeth that are attacked, and the bicuspids are but slightly marked. The first molars were presumably affected, but some of them are now absent. The other molars are normal, and present no peculiarities of shape, but the history of an extraction as given by the patient leaves little doubt but that the teeth possess all the other characteristics, especially the difficulty of extracting, which is a regular accompaniment of the diathesis.

Very recently Dr. Milner Fothergill says, "There is little doubt that the configuration of the teeth in gout has a distinct value. The teeth are solid, and in the 'Norse' type—massive. They are blunt and thick at the edges and worn down. They have a great tendency to come out without any caries, but from osteitis extending from the neck along the fang. The incisors are more worn down than the cuspids or molars are. The centre of the tooth is more of a dark colour. When a gouty person shows the teeth they are at once to be detected. The gum is much retracted. Sometimes the upper front teeth are very massive." This description can well be applied to the cast before us of gouty teeth in all characteristics—early wearing of the edges, the retracted gum, etc.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, February 7th, 1887, CHAS. S. TOMES, F.R.S., *President, in the Chair.*

THE minutes of the previous meeting having been read and confirmed,

The President announced that Mr. Frank H. Kissack, L.D.S., Eng., of 17, Bentinck Street, Manchester Square, had been duly nominated as a candidate for membership, and would be balloted for at a subsequent meeting.

The following candidates were then balloted for, and elected members of the Society :—

Henry Davis, M.R.C.S., 157, Gower Street, W.C.
Daniel Browning, L.D.S. Eng., 27, Upper Montague Street, W.
Frank H. Briggs, L.D.S. Edin., 5, Park Crescent, Torquay.
William Edward James, L.D.S.I., Kingston-on Thames.

The Secretary read the following letter from Mr. Jas. Parkinson :—

36, *Sackville Street*,
February 7th, 1887.

DEAR MR. PRESIDENT,

I feel that the time has arrived when I must ask the Council to relieve me from the treasurership of the Odontological Society.

I am sorry to say that the state of my health is still very indifferent, preventing me from attending, as I would desire, to its affairs as Treasurer. I have been obliged to ask the same of the British Dental Association.

I may truly add that it is a source of great grief to me to sever myself from old friends and associates, but such time must sooner or later arrive.

I will take this opportunity of thanking the Council and the Society generally for their uniform kindness to me at all times and on all occasions.

I propose to hand over to my successor the balance I have in hand, and which will be at your disposal for investment or otherwise, as the Council may determine.

I am very pleased to be able to state that during the thirteen years of my Treasurership we have been enabled to add largely to our resources. I find on reference to the accounts of the year 1873, when I took the position of Treasurer, that our invested property amounted to £777 ; whereas in 1886 it amounts to £1,417. We have also, during this period, been able to furnish our rooms, and add materially to the requirements of the Library and Museum ; and when I hand over to my successor the balances, you will have a sum equal to £2,460, or thereabouts. So that, having paid for all these advantages, you will have increased your resources since 1873 by nearly £1,600 in money.

Believe me always,
Yours most sincerely,
JAS. PARKINSON.

Chas. Tomes, Esq., President,
Odontological Society of Great Britain.

The President said that much as they regretted the loss of Mr. Parkinson's services, the Council felt that in his present state of health they could not ask him to continue to perform duties which must necessarily be attended by a considerable amount of trouble and responsibility. They could not, therefore, do otherwise than accept the resignation, and tender him their thanks for the care he had taken of the Society's property during his term of office.

It was the province of the Council to fill the vacancy thus caused, and he felt sure the members would be glad to hear that Mr. Thos. Arnold Rogers had been prevailed upon to accept the office.

Mr. Weiss said he was sure the members would not allow this announcement to pass without desiring to give formal expression to the gratitude which he knew they all felt to Mr. Parkinson for the services he had rendered to the Society during his long term of office. The treasurer had sometimes very disagreeable duties to perform in pressing for payment of subscriptions, and still more when he was obliged to propose the exclusion of members from the Society; and it said a great deal for Mr. Parkinson's unfailing tact and good nature, that, whilst he had performed his duties most efficiently, he had done so without exciting the smallest personal animosity towards himself. He (Mr. Weiss) trusted that Mr. Parkinson's health would soon improve, and that they might have the pleasure of seeing him again at the meetings, and of thanking him personally for what he had done. He proposed that the thanks of the Society be given to the late Treasurer for the great care he had taken in the management of the Society's property.

Mr. Charters White said he had great pleasure in seconding the resolution. He had known Mr. Parkinson for a good many years, and could fully endorse all that Mr. Weiss had said with regard to his unvarying kindness and courtesy.

The resolution was at once carried by acclamation.

The Librarian (Mr. Weiss) reported that the only addition made to the Library during the past month was the January number of the "Quarterly Journal of Microscopical Science."

The Curator (Mr. Storer Bennett) reported that the following skulls had been purchased by the Council, viz.: those of the velvet monkey (*Cercopithecus Lalandii*), green monkey (*Cercopithecus Callithrix*), ring-tailed coati (*Nasua Rufa*), kinkajou (*Cercoleptes Caudivolvulus*), Coypu rat (*Myopotamus Coypu*), Indian fruit-bat (*Pteropus Medius*), and brush-tailed kangaroo (*Petrogale Penicillata*). It would be noticed that several of the teeth of the Coypu rat were carious. Mr. Howard Mummery had presented the skull of a Japanese pug, which showed extremely well the underhung lower jaw so characteristic of these animals; and to the Zoological

Society (through the kindness of Mr. Bland Sutton) they were indebted for the presentation of the skull of an agouti (*Dasyprocta agouti*), in which the molar teeth were extensively affected with caries.

Mr. Betts exhibited models of a boy aged eight years and ten months, in which none of the milk teeth had been shed, nor had the first permanent molars been erupted. The boy's mother and the elder children of the family had retained temporary molars, and the mother had till quite recently a temporary incisor.

He also related the following case of the eruption of a tooth after the death of its pulp :—A lady, about thirty-five years of age, who had for some years been wearing a small gold plate supplying an absent right upper canine, came to him complaining of severe neuralgic pain, and also that lately her plate had ceased to fit, owing to "a lump" in the gum beneath it. On examination it was found that the pointed tip of a tooth was just visible through a small orifice in the gum, and further that a shaft-like carious cavity led vertically up to the pulp, which was fully exposed. Arsenic was applied, the pulp devitalised, and the root eventually filled, the gum having to be packed back to permit of the operation. Since then, as shown by the model, the tooth had completely erupted. A first bicuspid had originally occupied the space, but it had been destroyed by caries, and extracted. The case was interesting, as showing clearly how little a tooth itself had to do with the process of eruption, and that the force by which this was brought about was evidently external.

The President said the point to which Mr. Betts had called attention was certainly interesting. The tooth was dead, and the growth of the root must have been arrested, yet the tooth had travelled down a distance equal to the length of its crown.

Mr. Hutchinson remarked that another interesting point in the case was how far the wearing of the plate had been instrumental in causing the eruption of the tooth. It had frequently been noticed that the wearing of regulation plates appeared to have the effect of hastening the eruption of teeth covered by them, and he thought it probable that this tooth might have remained hidden in the jaw but for the irritation caused by the pressure of the plate over it.

Mr. Henry Weiss thought that what took place in this case was very similar to the process by which a dead root was shed.

Casual Communications were then read, and after the President had delivered his Inaugural Address, the Society adjourned.

Dental News.

ANNUAL GENERAL MEETING OF THE GOVERNORS OF THE DENTAL HOSPITAL OF LONDON,

Held at Leicester Square, March 10th, 1887, SAMUEL CARTWRIGHT, ESQ., *one of the Vice-Presidents, in the Chair.*

THE Secretary submitted the Report of the Committee of Management.

The Committee of Management of the Dental Hospital of London, in presenting their Twenty-ninth Annual Report, are pleased to be able to announce that the past year has again been one of prosperity.

The total amount received for the General Fund during the year was £1,712 17s. 7d., as against £1,654 0s. 1d. in 1885.

The Donations of Life Governors during the past year amounted to £493 10s. 0d. as against £265 in 1885, while the General Donations amounted to £68 13s. 1d. as against £119 7s. 9d. in 1885.

The Annual Subscriptions amounted to £703 19s. 6d., as against £703 16s. 0d. in the preceding year.

The amount received from the Metropolitan Hospital Sunday Fund was £72 18s. 4d., and from the Hospital Saturday Fund £29 6s. 5d., being a slight increase on the amount received from the same sources in 1885.

The total number of operations performed last year was 43,745, being 4,560 in excess of those of the previous year, and in consequence of the continued increase in the number of patients, it has been found necessary to further enlarge the Hospital, and plans are now being prepared for consideration, so that the work should be carried out at the least possible expense. The Managing Committee sincerely trust that the benevolent public and friends of the Hospital will, during the

Jubilee year, assist the Committee in order that the work the Hospital is doing may be still further developed.

The whole of the interior of the Hospital has been thoroughly cleaned and painted, at a cost of £76; this work was greatly needed.

It being twelve years since anything had been done to the brickwork and Portland cement outside the Hospital, Sir Edwin Saunders most liberally offered to contribute to the expense of these repairs, and Sir Edwin subsequently paid the entire cost of the work, amounting to £50.

Other extra charges on the finances of the charity have had to be met during the past year, viz., £20 for extra lavatory apparatus, in consequence of the large increase in the number of Students, and for sanitary reasons; £36 for extra Operating Chairs, which it was necessary to purchase in consequence of the large increase in the number of patients, and £21 for fittings for the new stopping room.

During the past year the following gentlemen have been elected Vice-Presidents:—His Grace The Archbishop of Canterbury, Sir John Tomes, F.R.S., G. A. Ibbetson, Esq., and James Parkinson, Esq., the three latter gentlemen being zealous and tried friends of the Charity.

The Commitee have to express their unfeigned regret at the resignation of the Honorary Secretary, Mr. G. A. Ibbetson, a post which he held with much credit for a period of 13 years, and, while thanking him for his long and valued services, are much gratified to feel that the Institution is not altogether to be deprived of his counsel, as he will continue to be associated with it as a Vice-President.

In accordance with the Bye-laws, the following gentlemen retire by rotation from the Committee of Management:—The Rev. J. Oakley Coles, Messrs. G. Lambert, H. Moon, S. W. Sibley, and J. R. Turle, and Messrs. S. D. Fuller and James Parkinson have resigned.

The following gentlemen are eligible for re-election. The Rev. J. Oakley Coles, Messrs. Lambert, Sibley & Turle, and the names of Professor Victor Horsley, F.R.S., Messrs. F. Canton and J. Mowatt, are nominated to be added to the Committee.

The Committee desire to place on record their obligations to the Medical Officers for the zeal they have shown in the performance of their duties, which has tended so much to the usefulness and prosperity of the Hospital during the past year, whilst to the auditors their thanks are also due for the trouble they have taken in auditing the accounts.

In conclusion, the Committee have the gratification to express their high estimate of the valuable services of their Secretary, Mr. J. F. Pink, whose appeals for aid during the past year have resulted in a considerable increase of income to the Hospital.

SEPTIMUS W. SIBLEY,
Chairman.

REPORT OF THE MEDICAL COMMITTEE FOR THE YEAR 1886.

The Medical Committee have much pleasure in reporting a continued increase in the number of patients daily seeking relief at the Hospital, and in stating that notwithstanding the extreme overcrowding of the waiting rooms, staircase, and operating rooms which this increase has necessarily created, the patients have been noticeably anxious to assist the Hospital officials by maintaining orderly conduct and paying respectful attention to instructions, thereby showing their appreciation of the benefits conferred by the Institution.

The increase in the number of operations performed during 1886 is an extremely large one, viz., 4,560; this is greatly in excess of that of any former year.

The total number of cases treated during 1886 was 43,745, and it is extremely interesting to notice that this represents about double the number of cases treated in 1874 (21,904), the first year of work after the Hospital was removed here from the original building in Soho Square.

The following table shows *in extenso* the record of the various operations undertaken and carried out :—

Extractions	Children under 14	4,613
	Adults...	11,299
	Under Nitrous Oxide	7,305
Gold Stoppings		3,094
White Foil ditto Plastic ditto ...		10,155
Irregularities of the Teeth treated mechanically		1,427
Miscellaneous Cases ...		4,158
Advice Cases ...		1,694
	TOTAL...	43,745

The retirement of Mr. Moon was noticed, and various changes among the junior staff.

The Committee have pleasure in stating that the room in the Tower basement recently fitted up as a work room, where the students can make regulating plates, models, &c., &c., has proved most useful, and Mr. W. A. Hooton, one of the students, has been appointed to undertake the charge of the room, and superintend the work therein carried out.

The Committee desire to tender their special thanks to Sir Edwin Saunders for his great kindness in respect of the Scholarship which bears his name. Through an unexpected change in the investment connected with that endowment its income was reduced about £3 annually. Sir Edwin generously undertook to supply the deficiency during his life, and to bequeath a sufficient sum to maintain the Scholarship in the future.

The Medical Committee have heard with pleasure and satisfaction that a scheme is in contemplation for providing additional accommodation in the Hospital, as, with the increased number of patients in daily attendance, and an unusually large entry of students, the good work of the Hospital and School is now carried out, in the space at command, under conditions of great difficulty.

In closing their report, the Medical Committee cannot but expressto the Managing Committee their appreciation of their unvarying courtesy to them during the past as in all former years.

GEO. GREGSON.
Chairman.
DAVID HEPBURN.
Hon. Secretary.

JUBILEE COMMEMORATION DINNER IN CONNECTION WITH THE DENTAL HOSPITAL OF LONDON.

To celebrate the Queen's Jubilee, a banquet was given on Friday evening, the 11th inst., at the Hôtel Mètropole, in connection with the Dental Hospital of London. Sir James Paget, Bart., F.R.S., presided, and was supported, among others, by Sir Risdon Bennett, Sir W. MacCormac, Sir Edwin Saunders, Professors Flower, Christopher Heath, and John Wood, Dr. Bristowe, Dr. Frederick Roberts, Dr. Pavy, Dr. Potter, Dr. George Johnson, Dr. Brodie Sewell, Dr. Dudley Buxton, Dr. Lubbock, Mr. Macnamare, Mr. Ernest Hart, Messrs. Septimus Sibley, Samuel Cartwright, Robert Hepburn, J. Woodhouse, George Gregson, Edward Trimmer, Hallett, Smith, Turner, and Henry Power.

In proposing the toast of "The Queen," the Chairman said that every year during the past half century had added to the obligations we owed to Her Majesty for her services to the State, her unbounded zeal for the promotion of every good work, and, above all, for the model of wife and mother, even to the third generation, which she had shown to us all. He wished her many years of government over an undivided kingdom. (Cheers.)

The toast was loyally honoured, as also was that of the "Prince and Princess of Wales," in giving which the Chairman remarked on the fact that that day was the anniversary of their Royal Highness's wedding.

The Chairman, proposing the toast of the evening, observed that they had not met to do more than indirectly promote the prosperity of the Dental Hospital, for their purpose was rather that they might venture to boast of the prosperity of that institution at the present, and to hope that it might be long continued. One could not but observe how well the hospital prospered, and especially how great was the good it had done, and how that great good seemed to be every year increasing. Looking at the hospital in the mere view of charity, it was hard to estimate exactly the benefit it produced. It was difficult to estimate, for example, the amount of happiness which was given to the 40,000 people who had been attended in one year. This total was still increasing, and had increased, he believed, 4,000 within the last month. Few persons had passed through life without knowing the happiness of good dental surgery. Let them imagine 40,000 people suffering, without any hope of remedy. They might consider the comfort we had from the teeth. That very evening a great part of their enjoyment of a good dinner had been due to them. On the morrow their comfort would be in some way determined by the way in which their teeth had been judiciously employed. (Laughter.) If they multiplied their pleasure by 40,000, they would estimate more nearly the benefits conferred by the institution. Besides, they were aware of the influence of the teeth on the general health. There they stood—the boundary between that which was dead and that which was to be living—and upon them depended the first, and often the principal step of what should be the progress in the change of the dead into the living by the process of digestion, and what the value of the living texture should be, which had begun to form. Here the amount of good which they did was past measurement. The

Dental Hospital was, as far as he knew, the best institution of the kind which was to be found in Europe, if not in the whole world. (Cheers.) It was the best fitted in size and extent, the best furnished with apparatus, with chairs such as would in other hospitals be called beds, the best in its arrangements, and the most complete in the readiness with which its help was given, and he believed he might add the most complete in the skill of those who exercised themselves in it. (Cheers.) Sir James Paget then went on to speak of the utility of the dental school in connection with the hospital as an example of the union of charity and science; and he afterwards dwelt upon the changes which had taken place in the profession during the last fifty years.

Sir E. Saunders replied, and the remaining toasts included "The London School of Dental Surgery" (proposed by Mr. John Wood, Mr. Morton Smale responding), and "The Royal College of Physicians and Surgeons" (submitted by Mr. S. W. Sibley, and acknowledged by Sir Risdon Bennett and Mr. Christopher Heath.

The toasts were interspersed with an admirable selection of vocal music, in which Dr. Roberts, Dr. Lavies, Messrs. David Hepburn, Smith, Underwood, Fairbank and others took a part.

NINTH INTERNATIONAL MEDICAL CONGRESS, WASHINGTON, D.C., SEPTEMBER 5, 1887.

President—N. S. Davis, M.D., LL.D.

Secretary General—John B. Hamilton, M.D., of U.S.A.

SECTION 17.—DENTAL AND ORAL SURGERY.

President—Dr. J. Taft.

Vice-Presidents.

Drs. W. W. Allport, F. Abbott, W. C. Barrett, S. W. Dennis, C. L. Ford, W. H. Morgan, H. J. McKellops, A. T. Metcalf, A. L. Northrop, A. O. Rawls, Joseph Richardson, C. W. Spalding, L. D. Shepard, James Truman, W. W. H. Thackston, V. E. Turner, Prof. Dr. F. Busch, Drs. W. Herbst, L. N. Hollander, Andrieu, E. Magitot, V. Haderup, T. H. Harding, W. Geo. Beers.

Secretaries.

Dr. E. A. Bogue, 29, East 20th Street, New York City.
Dr. F. H. Rehwinkel, Chillicothe, Ohio.
Dr. E. Brasseur, 6, Rue Mogador, Paris, France.
Dr. Elof Fœberg, Stockholm.
Dr. Julius Parreidt, Leipsig, Germany.

Council.

Drs. R. R. Andrews, C. F. W. Bœdecker, C. A. Brackett, B. H. Catching, George H. Chance, E. S. Chisholm, C. C. Chittenden, D. M. Clapp, W. R. Clifton, J. S. Cassidy, K. B. Davis, A. M. Dudley, M. W. Foster, J. G. Friedrichs, C. E. Francis, George L. Field, F. J. S. Gorgas, P. G. C. Hunt, A O. Hunt, R. Finley Hunt, George W. Keely, Edmund C. Kirk, James Lewis, James McManus, W. N. Morrison, J. Hall Moore, T. T. Moore, Edgar Palmer, H. J. Plomteaux, S. B. Palmer, W. A. Spalding, C. S. Stockton, A. H. Thompson, W. C. Wardlaw, J. W. White.

Finance Committee of this Section.

Dr. J. W. White, Treasurer; Dr. A. M. Dudley, Secretary; Drs. Edgar Palmer, H. J. McKellops, L. D. Shepard, C. H. Winkler, W. W. Allport, W. W. Walker.

Reception Committee of this Section.

Drs. A. L. Northrop, H. J. McKellops, A. M. Dudley, William Carr, L. D. Shepard, E. Maynard, Dr. McFarlan, James McManus, W. W. H. Thackston, E. A. Bogue, F. H. Rehwinkel, C. F. W. Bœdecker.

Committee on Operative Dentistry and Oral Surgery—Clinics.

Drs. C. F. W. Bœdecker, J. A. Watling, R. L. Cochran, F. Abbott, W. C. Wardlaw, J. D. Patterson.

Committee on Prosthetic Dentistry.

Drs. George L. Field, H. B. Noble, A. O. Hunt, John Allen, T. T. Moore, N. W. Morrison, R. B. Donaldson.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen, having passed the necessary examinations, were, at a meeting of the Board of Examiners on February 14th, admitted Licentiates in Dental Surgery, namely :

C. H. Buckley, 54, Shaw Road, Oldham ; I. Clifford, 8, Grosvenor Street, W. ; G. Cunningham, 2, King's Parade, Cambridge ; A. B. Dalby, 33, Rodney Street, Liverpool ; K. W. McAlpin, 36, Tregunter Road, South Kensington,

S. W. ; A. F. C. Thomson, 108, Guildford Street, Russell Square ; P. R. T. Harris, M.R.C.S., 24, Chapel Street, Penzance, Cornwall.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN, 40, LEICESTER SQUARE, LONDON, W.C.—The next Meeting of the Odontological Society will take place at its Rooms, 40, Leicester Square, W., on Monday, April 4th, at 8 p.m. Business: Casual Communications by Messrs J. Ackery, F. Henri Weiss, Boyd Wallis, C. V. Cotterell, S. J. Hutchinson, W. Harrison, J. Penfold. Paper by C. W. Newland Pedley, F.R.C.S., on the Pathology of Riggs' Disease, or Pyorrhœa Alveolaris.

WILLOUGHBY WEISS, *Hon. Sec.*

WRITING upon matrices, the editor of the *Dental Review* (Chicago) says :—The proper adjustment of a matrix to a tooth is a consideration which we fear but few recognise as being important; unless great caution is observed, the undue forcing of a matrix between crowded teeth will almost always result in a fractured cervical margin, even if the matrix is reduced to a minimum in thickness; the fracture thus induced may be so slight as to escape the attention of the operator at the time, and still be of magnitude sufficient to entirely destroy the integrity of both the enamel and dentine at the point of contact with the filling. There are a great many different varieties of matrices to be found in the market; some are simple in construction, while others are more complex in their nature; and not one out of this goodly number can be made universally applicable; therefore, it remains for us to say that the ideal matrix still lingers within the hidden recesses of man's inventive genius.

ADAPTABILITY OF MICRO-ORGANISMS.—In a recent Presidential Address to the Royal Microscopical Society, the Rev. Dr. Dallinger contributed some very suggestive information as to the capability of micro-organisms to adapt themselves to surrounding conditions. This was obtained whilst experimenting with "monads" contained in a medium so arranged that the temperature could be gradually altered or maintained constant at the will of the operator. In one experiment, commencing with the normal temperature of 60° F., this was raised gradually so that at the end of two months 70° F. was reached without the organisms suffering any apparent inconvenience. On the temperature reaching 73° F., however, hair vitality and reproductiveness appeared to be adversely effected; this temperature was therefore maintained constant for the next two months, during which time they regained their full vigour. Then the temperature was again gradually increased until in five months more it had reached 78° F., when another long pause became necessary to allow of adaption. The same method of slowly increasing the temperature, with intervals of pause, was followed, until at last the temperature of 158° F. was reached, when the experiment was terminated accidentally. But by that time the vital conditions had in this way been, almost imperceptibly, so altered that organisms which originally lived and flourished at a temperature of about 65° F., and would have been killed at 140° F., had become inured to withstand a temperature higher than the starting point by nearly one hundred degrees, whilst sudden reversion to the original temperature was actually fatal to them. The research is of interest, since, as all of us now know, our mouths swarm with countless bacterial forms, and all that concerns *them* concerns *us*.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

To the Editor of the "British Journal of Dental Science."

SIR,

I beg to draw some attention to a few anomalies of the Dental Register.

Case No. 1.—A gentleman and his lady called to consult me a short time since, and asked me to make a case for his lady at a mechanical charge, as he was a dentist, and his name was on the register. In picking out a shade, he did not know a right from a left lateral—in fact, I question if he knew a central from a canine; and as he seemed very much interested in a dental tray and the use of composition, I didn't suppose he had ever seen "the like in his life." The gentleman is a flourishing pawnbroker, and most admirably adapted to that "profession." His father was a chemist, but he did not take kindly to the pestle and mortar, did not even pass the preliminary, but at his father's death sold the drug business, and placed himself on the dental register.

Case No. 2.—Having occasion to go to a chemist's shop in the neighbourhood, I was asked if I would extract a tooth for a rather rough-looking customer who just came in, and having done so, I said that I supposed he extracted a good many teeth here, and was told that he never had extracted a tooth in his life, nor his assistant either. On my remarking he had some good, fair instruments, tooth forceps, &c., he said, "Yes, I bought them from Mather ; as I had put my name in the register, I thought they might come round to see if I had any tools."

Case No. 3.—I had, for over two years, an assistant, a well-educated gentleman, who was competent in both operating and workroom, having served seven years under his uncle of the same name, and who, for many years, had conducted a most respectable dental practice, about £2,000 a year ; this young man failed for some cause to place his name on the register, and has since, within the last year or so (being now wishful to commence practice) applied, appealed, and spent money in vain to put himself on the Register of Dentists.

These are only a sample of a few of what I call *anomalies* of the dental register ; many more might be given. I enclose my card, and sign myself as one who in this matter would like to see

"FAIR PLAY."

ANSWERS TO CORRESPONDENTS.

Retlaw.—We cannot insert anonymous articles ; nor can we commit ourselves to your views. We regard the Association in question as a very valuable one, which, although sometimes differing from us in dental politics, is working in other ways to achieve the object which we—the *British Journal of Dental Science*—have most at heart—the advancement of Dental Science in the United Kingdom.

Mr. Amoore (Edinburgh).—As we issue our journal on the 1st and 15th, we shall be glad to have the notices of the meetings of your Society a little earlier. We often receive them too late for insertion.

Messrs. Rilot and Seymour.—We received your notice of the meeting of the Students' Society *too late* for insertion.

H. J. B.—It appears that the gentleman in question is registered as residing in Bolton ; so that the statement in the advertisement is untrue, in fact. But we imagine there might be some difficulty in proving the illegality of the practice. We advise H. J. B. to communicate with Mr. Morton Smale, Secretary of the British Dental Association, 40, Leicester Square, London, *Communications have been received from—*

Mr. T. G. O'Neill, London; "Retlaw"; H. J. B.; Messrs. Rilot and Geo. Seymour, London; Mr. Walter Harrison, Brighton; Dr. W. Hale White, London; Mr. J. S. Amoore, Edinburgh; Mr. Wynne Rouw, London; Mr. Willoughby Weiss; Mr. Francis Pink, London; Mr. John Wright, Bristol; Mr. Henry Knoop, Manchester; Mr. J. Healey; Mr. C. W. Pattinson, London; Mr. W. Palethorpe, Birmingham; Mr. H. R. F. Brooks, Banbury; Mr. Entwistle, Liverpool.

JOURNALS RECEIVED :—

Pharmaceutical Journal and Transactions, The Chemist and Druggist, The British Medical Journal, Journal of the British Dental Association, Oerterreichisch-Ungarische Vierteljahrsschrift für Zahnheilkunde, Boletin de Medicina (Santiago), Independent Practitioner, Dental Cosmos, Items of Interest, Southern Dental Journal, Transactions of Students' Society, London Dental Hospital, Scientific News, Le Progrès Dentaire, Deutsche Monatsschrift für Zahnheilkunde, L'Odontologie, American Journal of Dental Science, Dental Review, Dental Record, Glasgow Medical Journal, The Western Dental Jorunal, Transactions of the Odontological Society. Giornale di Correspondenza pei Dentisti, L'Art Dentaire.

HOSPITAL REPORTS.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, for Month ending Feb. 28, 1887 :—

Number of Patients attended		2863
Extractions	Children under 14	353
	Adults	834
	Under Nitrous Oxide	634
Gold Fillings		507
Other Fillings		1109
Advice and Scaling		198
Irregularities of the Teeth		159
Miscellaneous and Dressings		574
Total		4368

R. Wynne Rouw, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, from Feb. 1 to Feb. 28, 1887:—

Number of Patients attended		1925
Extractions	Children under 14	436
	Adults	692
	Under Nitrous Oxide	791
Gold Stoppings		161
Other Stoppings		648
Advice and Scaling		373
Irregularities of the Teeth		264
Miscellaneous		196
Total		3561

CHAS. W. PATTINSON,
House Surgeon.

Work done at the Victoria Dental Hospital of Manchester, during the Month of February, 1887:—

Number of Patients attended		861
Extractions	Children under 14	635
	Adults	
	Under Nitrous Oxide	83
	Cocaine	3
Gold Stoppings		29
Other Stoppings		71
Miscellaneous		238
Total		1059

HENRY L. KNOOP,
Hon. Secretary.

Monthly Statement of operations performed at the Dental Hospital, Birmingham, from Feb. 1 to Feb. 28, 1887:—

Number of Patients attended		900
Extractions	Children under 14	
	Adults	
	Under Nitrous Oxide	27
Gold Stoppings		2
Other Stoppings		82
Advice and Scaling		126
Irregularities of the Teeth		9
Miscellaneous		72
Total		1218

British Journal of Dental Science.

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ON THE PHYSIOLOGICAL ACTION OF NITROUS OXIDE GAS.

By Dudley W. Buxton, M.D., B.S. Lond., M.R.C.P.,
Anæsthetist in University College Hospital; the Hospital for Women, Soho Square; and the London Dental Hospital.

In a preliminary communication* made before this Society, I attempted to review some of the more authoritative views which have, from time to time, been advanced with regard to the physiological action of nitrous oxide upon the organism. It remains for me to consider the evidence which experimental research has placed in our hands, and to attempt, as briefly as may be, to formulate what conclusions are warranted by the results of such researches; and further, to adduce from these conclusions practical rules such as may guide us in the employment of nitrous oxide gas as an anæsthetising agent.

Aëriform bodies can only obtain ingress into the vital system of warm-blooded animals by absorption through mucous membranes; practically, this absorption is in the higher mammalia confined to the vast expansion of surface afforded by the acini of the lungs. Passing through the sinuous nasal meatuses, aëriform bodies are warmed, and sifted, so to speak, of floating solid particles; they then traverse the guardian portals formed by the larynx, and so enter the lungs. Usually the constrictors of the pharynx maintain a closure of the œsophagus; however, timid persons, whilst inhaling, make efforts at swallowing, which, by partly inflating the stomach, may lead to unpleasant effects—nausea, or mechanical interference with the action of the heart—leading to syncope. This should of course be avoided. So thin is the wall of the acini and air-cells, that the lungs may be considered as consisting of aëriform matter, separated from liquid matter by an exceedingly tenuous animal membrane, which is capable of the active interchange of gases from the aëriform matter to the liquid matter, and *vice versâ*. Whatever aëriform body is inhaled into the lungs, provided it does not impede the mechanical acts of respiration, can diffuse into the blood, while the gases in the blood can diffuse out into the free air space of the lungs. Gaseous bodies, we know, exist at least in two conditions in the blood: (1) In mere solution; (2) In combination with the albuminoids found in the corpuscles and serum. The essential conditions of life for the organism are, that in proportion as the bodily tissues are split up for the production of movement, or force, heat, electricity, and so on, so should the blood obtain organic material from the alimentary tract, and oxygen wherewith to build it into the tissues; and secondly, that the blood shall be so depurated of organic and saline refuse, and of aëriform impurities through the mechanism supplied by the lungs. This, I need hardly remind you, consists in the diffusion of carbonic acid gas, and other obnoxious materials from the blood into the residual air in the air space, and the diffusion into the blood of oxygen from the residual air. So long as the oxygen tension is higher, and the carbonic acid tension is lower, in the residual air, so long will interchange between the blood gases and atmospheric gases take place. When, however, other aëriform bodies than atmospheric air find their way into the air space of the lungs, other conditions are imposed upon the organism. Let us consider these. If the gas be respirable, and actually enters the lung space, it will obey the laws of diffusion, and in course of time displace the residual air. Then, being brought into close contact with the blood, it will either simply allow of diffusion out of blood gases, and, provided its tension in the lungs is above that in the lungs, diffuse into the blood, and so reach the tissues, there to be rejected or built into their substance, according as it is available or not for their metabolism, and if it is able to link itself into chemical union with some constituents of the blood, it will travel so combined to the tissues, and more or less profoundly influence their behaviour, according to its own vital peculiarities. Let us consider to what class nitrous oxide gas belongs, and what is the *rôle* it plays in the blood.

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* A Paper read before the Odontological Society of Great Britain, March, 1885.

Priestley found nitrous oxide was readily absorbed by water, in a proportion of one-half its bulk. When carbonic acid gas is present in the water, no absorption of nitrous oxide takes place; but, according to the careful experiments of Davy, when water saturated with nitrous oxide is brought into contact with carbonic acid gas, the latter ousts the nitrous oxide, becoming absorbed while the nitrous oxide is liberated. According to the same authority, nitrous oxide will displace oxygen and air from water. When we remember that blood consists of 78 per cent. of water, we see these researches have a very important bearing. Neutral saline solutions, further, possess very feeble attraction for nitrous oxide. None of the older observers investigated the behaviour of nitrous oxide toward water in which albuminous material was present; and my investigations in this direction are not, I think, sufficiently definite for me to venture upon *ex cathedra* utterances; but it seems probable that albuminous solutions of various strengths are possessed of powers of absorbing nitrous oxide other than those inherent in pure water.

The presence of nitrous oxide in the air space of the lungs is of importance in the following relations : (1) By methods in use in this country oxygen is practically excluded, and, were oxygen admitted together with nitrous oxide, it is probable, our present knowledge tells us, that the oxygen would not be ousted by the nitrogen compound; and (2) The effect nitrous oxide has upon the elimination of carbonic acid gas from the lungs.

1. The deprivation of oxygen leads to asphyxia pure and simple; for example, if a person inhales in an atmosphere of nitrogen, although all carbonic acid gas (dioxide) diffuses out, yet the advent of asphyxial symptoms, hyperpnœa, dyspnœa, and convulsions appear.

2. Now, does nitrous oxide in any way interfere with the elimination of carbonic acid gas (dioxide) from the lungs? Careful experiments have shown that nitrous oxide affects carbonic acid elimination in only an indirect way. During the cutting off of oxygen supplies, the tissue metabolism, whereby carbonic acid and water are thrown into the circulation, is greatly lessened, and as a consequence the production of carbonic acid gas is lessened, so that in this case the diminished elimination is merely an indication of lessened production. We find a marked similarity between the tissues rendered stagnant by nitrous oxide, and the sluggish behaviour of organic matter in animals during hibernation. At the same time, there is a fairly active carbonic acid elimination, as much, in fact, as represents the tissue waste during the period

of anæsthesia ; and this carbonic acid, in the absence of recuperative oxygenation, is, I submit, an important matter requiring our attention when we have to take into consideration the practical lessons the physiology of nitrous oxide narcosis teaches. Here I will briefly say it seems consonant with these lessons that we should ensure the removal of this carbonic acid so that the patient may not breathe and rebreathe nitrous oxide polluted by it.

We may then take it that the blood is capable of acquiring nitrous oxide by simple absorption, and probably by the union of that gas with the albuminous materials found in the liquor sanguinis and corpuscles. No attempt has as yet succeeded in demonstrating the conjunction of nitrous oxide with hæmoglobulin—at least, no crystallised forms have been found, such, for example, as we are cognisant with in the case of nitric-oxide hæmoglobulin. However, in the last case we have to bear in mind the fact which was pointed out long ago by Davy, that nitric-oxide possessed a strong affinity for the salts of iron, so that it is, perhaps, not unwarrantable to suppose the iron containing hæmoglobulin should readily unite itself in actual chemical union with nitric-oxide. But nitrous oxide can, as we have pointed out above, actually oust oxygen from its condition of absorption, and must with great rapidity become intimately associated with some of the blood constituents in order that it may be wafted, with the extraordinary rapidity we all are aware of, to the nervous centres, there to bring about that profound change in the nerve tissue which is evidenced externally by the anæsthetic coma of nitrous oxide narcosis. Researches made upon blood impregnated with nitrous oxide, by means of the spectroscope, do not afford us evidence of value, at least, to my mind. MacMunn, whom I have before quoted, failed to obtain any characteristic spectrum from the blood of animals poisoned with nitrous oxide. I have repeatedly made the attempt to obtain a spectrum peculiar to this agent, but have also met with want of success, the only bands discernible being the broad one between Frauenhofen's D and E lines, which, of course, merely represents the spectrum of reduced hæmoglobulin. My friend Dr. Halliburton, Assistant Professor of Physiology in University College, was good enough to examine some blood for me, and he concurs in the results given above. Now this negative evidence, cannot, I submit, be taken as sufficient for us to base conclusions upon it which deserve to be reckoned final. The present methods at my disposal preclude me from ascertaining the condition of the blood when nitrous oxide in quantity sufficient to induce anæsthesia is given along with oxygen. I hope to be able to conduct this research later on; but as it necessitates a Fontaine's chamber, I can only prosecute it in Paris. Under the present circumstances, *pari passu* with the introduction of nitrous oxide we have the reduction of the hæmoglobulin by the tissues, hence the spectrum of reduced hæmoglobulin which is found.

In all experiments upon Mammalia with nitrous oxide gas, methods have been adopted which not only ensure a supply of the gas entering the lungs, but at the same time cut off the ingress of oxygen, so that there must in these cases always be a danger of confounding the symptoms due on the one hand to nitrous oxide, with those upon the other, which arise from solely the deprivation of oxygen. And further, in some experiments which we shall shortly have to consider, a third set of symptoms intrude themselves—namely, those dependent upon re-breathing noxious exhalations from the lungs. It is incumbent then upon us to make allowance for these sources of confusion.

It has been my endeavour in my own researches to eliminate as far as possible those conditions giving rise to serious fallacies in deducting conclusions, by conducting control experiments in which asphyxial phenomena were brought about. Further, by the use of an expiration valve in my tracheal cannulæ, I have attempted to obviate accumulation in the lungs of mephritic material. I am quite sure that much of the erroneous teaching which even now is rampant, and which regards nitrous oxide narcosis as merely asphyxia, arises from neglect of the above precautions.

(*To be continued*).

A CASE OF PARALYSIS FOLLOWING TOOTH EXTRACTION.

By H. R. Fryer Brooks, L.D.S., Ire.

Solomon has said that "There is no new thing under the sun," and it is quite possible that the experience I am about to relate may not be unique. Still, I do not remember that any authority upon Dental Surgery has referred to a lesion of this character as a possible sequence of tooth extraction. Localised paralysis, following such an operation upon a molar of the lower jaw, has been noticed by several writers. The generally accepted explanation—the close proximity and probable rupture of the inferior dental nerve—is, doubtless, the correct one.

The unusual symptoms in the following case may be partly attributed to such a cause. It is remarkable, however, that the disturbance was not confined to the part supplied by the nerve primarily affected, but was conveyed, by some obscure reflex agency, to a locality having no direct communication with it.

A. B., an agricultural labourer, applied to me on February, 28, for the extraction of the two roots of a second left lower molar. He had suffered pain for a few days, and, after a sleepless night, had walked nine miles to have the cause removed. Both stumps yielded readily to the elevator, and, as usual, I told my patient to rinse his mouth. "I can't," he replied, and I then noticed that both hands were rigid and contracted. The arms, from the elbows downwards, were, apparently, in a state of perfect insensibility. The chin and lower lip—to use the man's own words—felt "like pins and needles." Complete paralysis continued for about ten minutes, when the face, then the right arm, and finally the left, began to regain sensation and power. There was no previous history to account for the occurrence; the man assuring me that he had always enjoyed good health. A careful examination of the roots, which were large, revealed no "notch," although it is more than probable that one or both impinged upon the inferior dental canal. The noticeable features of the case are:—(1st) That the disturbance was bilateral. (2nd) That paralysis was not confined to the inferior dental, or even to the fifth nerve, but extended to nerves so remotely connected as the Median, Musculo-Spiral, and Ulnar (or possibly only the last mentioned (?)). (3rd) That the sensory and motor nerves of the upper arm were, as far as I could judge, entirely unaffected. To attempt any explanation of these phenomena is to enter upon a large field of speculative theory. It may, however, be safely surmised that they indicate some abnormal condition arising out of the intimate connection between the fifth nerve and the sympathetic system. Our present knowledge of pathology seems inadequate to solve problems such as these, and, useful as a close investigation of the subject might prove, it is only possible to speak of them in the most general and indefinite manner.

THE PREPARATION OF CAVITIES AND FILLING WITH CRYSTAL GOLD.*

By Dr. E. L. SWARTWOUT, of Utica, N.Y.

MR. PRESIDENT AND GENTLEMEN: I am to speak to you this evening, first, on the preparation of cavities in tooth-structure; and, secondly, on filling teeth with Watts's crystal gold.

Under the first division, with cavities easy of access, I proceed in the usual way to trim off the thin, rough edges with chisels, excavators and files; then, after removing the débris and soft bone with excavators and hoes, commence with a round cavity bur of proper size, and bur out the sides of the cavity from within outwards, by a motion like wiping it out with a pledget of cotton, using only the sides of the bur in the operation, leaving the cavity smooth and clean to the margins, with no edge or shoulder. During the past year I have been using for this purpose a new form of bur of my own pattern, designated as the oblong bur, which accomplishes this operation with greater safety to the patient and facility to the operator than the round cavity bur. The improvement consists in having the bur elongated, in order to secure straight and level sides, whereby it can be retained or held on thin, sharp edges of enamel while running rapidly, with the extreme end like a round bur with the grooves cut finer (from 14 to 16) and more straight on the sides than on the rounded point. I now take an 0, 00, or 000 round bur (depending on the size of the cavity) and run a groove around the inside of the margins to form the shoulder; then remove the dentine from or back of the groove towards the bottom of the cavity, with a larger bur, or with a round-pointed hoe, by cutting it down nearly on a line with the bottom of the groove. As a rule, I prefer the round to the wheel bur for grooving, on account of greater strength of edge, lessening the liability of fracture; and, as will be readily seen, the gold can be more perfectly packed in the concave than in the square groove made by the wheel bur.

Like all general rules with exceptions, there are cases where, in very shallow surface cavities, in localities almost inaccessible, with strong margins, it is necessary to use the wheel bur to get a sharply-defined edge to securely anchor the filling; but great care ought to be taken to thoroughly pack the gold in this groove, and special instruments with square or flat points should be used for that purpose (of which I will speak hereafter).

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* A paper read before the First District Dental Society of New York, and reported in the *Dental Cosmos*.

In some cases it is advisable, instead of the continuous groove, to make shallow, concave pits, a slight distance apart, or short grooves at intervals. This gives an edge of greater security where the walls are thin and frail; the support of the bony partitions being like buttresses to the wall of a brick or stone building.

Then we have cases of approximal cavities in the incisors, where the side walls are so thin that we can form no shoulder, but must rely upon anchorage at the cervical wall, and the point near the cutting edge of the tooth. It is well if we can get a slight incline or draft inwards on the side walls to help us out. The direction of the draft of the marginal edges must depend upon circumstances. In the last case mentioned I would have the draft inward in order to get all the anchorage possible for the filling. In cavities with good anchorage I would make the edges straight or level, with no draft either way. This applies only where crystal gold is to be used as the filling, to be inserted in the manner and according to the directions given in the second division of my subject—viz., the packing of the layers of gold must be against these margins by lateral pressure, and if properly done is immovable by after condensation, whereas in the use of gold foil the position of the layers against the margins is disturbed and changed by after compression and condensation, so that there is a liability to have spaces between the gold and margins, resulting in leakage, etc.; therefore the draft of cavities to be filled with foil should be slightly outwards, in order to close the joint more perfectly by the condensing.

In the case of approximal cavities in bicuspids and molars, in teeth with flattened or irregular surfaces, I first prepare those surfaces for contour fillings; if the teeth to be operated upon are in close contact, separate them by previous wedging with rubber, or by immediate wedging with a separator; when sufficient space is secured, round off the buccal and palatal corners adjoining the cavity, to give it the regular shape or contour that it ought to have, or a perfect tooth should have, before decay, using rubber, corundum and paper discs, sand-paper and lava strips of different degrees of fineness, and so finish the surfaces before excavating the cavity in detail, in order to prevent subsequent injury to the shape of the filling, which is very liable to occur in attempting to finish tooth-surfaces after the filling is contoured. This I hold to be of greater importance than putting a jeweller's finish on surfaces of gold fillings, and neglecting adjoining tooth-structure,as too often is the case in dental work made to exhibit. If necessary for better access to the cavity, cut down from the grinding surface and make a compound filling of it, according to the usual practice of all good operators. In teeth of good contour that are decayed on the mesial surfaces, of course we preserve the enamel intact; all that is required is to secure the space necessary by any good method so that the teeth can be readily operated upon. In burring out any sensitive cavity I always use the rubber dam, if it is possible to apply it, so that the cavity may be kept free of saliva during the whole operation, and then keep the cavity and the instruments moistened with oil of cloves. This, with new, sharp-cut burs, run rapidly, making quick, short passes or touches with the bur, for two or three seconds at a time only, usually overcomes the tenderness. In hypersensitive dentine (at the suggestion of Dr. E. Parmly Brown) I have used, with good success, equal parts of pure carbolic acid (Calvert's No. 1) and oil of cloves mixed, saturating the cavity two or three minutes before operating; also, with patients of fine nervous organisation, instead of using the air-syringe to blow out the cuttings, I find a small and very fine camel's-hair brush, of a size adapted to the cavity, very effective in the removal of cuttings, without the unpleasant sensation or nervous shock sometimes produced by the blower,—in fact, the touches of the brush are usually unnoticeable.

The last operation previous to filling is to scrape or smooth the margins of the cavity with an excavator, or square-pointed, hoe-shaped instrument, to remove the rough, ragged edges left by the bur, in order to make a more perfect joint with the gold. I employ, when practicable, fine corundum points for this purpose, using the finest corundum powder on a worn-out No. 1 or 2 round or wheel bur, coating the bur with shellac, then with the pulverised corundum; when hard, turn it to any shape desired by running it rapidly in the engine against any of the very hard woods. It is my belief that, if this operation (simple as it may seem) is faithfully performed in all cases, we shall hear less of failures with gold as a filling material; for the margins of the cavity are the vulnerable points of attack by acids and the fluids of the mouth, resulting in the loss of multitudes of the very best and most artistic fillings, all for the want of a little more attention to details, in order to protect and fortify the weakest point in the structure. To prove this, I selected a tooth out of the mouth that had a very small cavity on the approximal surface, and prepared it as I would for filling, with great care, using only a sharp, fine-cut bur. When complete, the cavity was one thirty-second of an inch in diameter. I placed it under the microscope, with a power of 500 diameters, and the appearance of the margins was like unto a circular saw—only it was not as true and perfect a circle as a saw of that kind should be when it leaves the hands of a good mechanic; but, on the contrary, it looked like a saw that had been struck by lightning, which had run around the edges, demoralising the teeth, but leaving the body of the saw intact. All around the margins it was one series of minute fractures of the enamel, which could not be detected with the naked eye. When we come to think of it, why should it be otherwise? This cutting against and into layers of the hard crystalline structure which constitutes enamel with steel instruments resulted in just what might be expected. I then lightly and carefully scraped the margins, and again placed it under the same magnifier, and its appearance was more orthodox and respectable—in other words, it was vastly improved. The corundum points will make a smoother surface and more perfect finish than any steel instrument.

The preparation of a dental cavity for a metallic filling should be carefully studied and measured with the eye in regard to anchorage, security, and contour of the filling to be placed in it, as also the outlines of tooth and filling as it will be when finally completed for beauty, safety, endurance and good care by the patient. All these can be seen with the mind's eye of the artistic dental operator—just as the sculptor sees his ideal as perfectly in his mind as though it were before him, in all its reality, a complete and finished work of art.

Watt's Crystal Gold.—Watt's improved crystal or (as it is sometimes called) sponge gold, from its resemblance to fine sponge in colour, porosity, and lightness, is deposited from a gold solution by a battery. Upon examination under the microscope we find it a mass of beautiful and brilliant crystals, resembling delicate fern-leaves interwoven with each other; of a light, feathery nature, very bright and sparkling, like burnished gold—a wonderful contrast to its dull-brown appearance to the naked eye. Instruments with sharp points easily penetrate through it; fine serrated instruments quickly enter it and chop it up; instruments with broad surfaces, file-cut or bur-cut, properly manipulated, gradually pack and condense the crystals together in one solid mass resembling molten gold, so that it may be rolled out like gold plate. It is therefore evident, from the nature and construction of this material, that it is of vital importance that instruments of the right kind be used in its manipulation, or sooner or later the word failure will be clearly stamped on its face. Most of the instruments manufactured for working crystal gold have answered the purpose well, especially those brought out and introduced by Drs. Dwindelle and Ballard, when this gold was in its infancy, which were made on the principle of broad flat surfaces file-cut or cross-cut. These were safe in the hands of careful operators. So all praise to the bridge that has carried us safely over to this point.

While we cannot rely upon welding this gold together as we can cohesive gold foil, by laying one sheet upon another and rubbing over the surface, thus making a perfect union of the two; yet the less it is worked up, moulded, or divided the better, in order to preserve the projecting points so moulded by the imprint of the instrument, and thereby secure the best condition to receive the subsequent layer and make as good a joint as possible.

The cross-cut faced instruments have a succession of points, which, stamped or pressed on the crystals, leave the same succession of points, which, by their weakness in standing as individual points, must of necessity be more or less broken up with the next layer pressed upon it. This is remedied to a great extent by using instruments that are filed only one way, avoiding all cross-cuts, so that the successive layers may fit together like a matrix. This improved form of points I have adopted, as I consider them the best instruments for manipulating crystal gold, and find them to more than meet my expectations—especially the small bur points, cut as fine as a gold finishing-bur, with grooves cut straight on the sides and the ends; with a good draft, not too deep, made to fit the grooves and around the shoulders of cavities. One can readily see that the form or shape of a plugger-point which best fits the pit, groove, or indentation around the margins like a die and counter-die will make the most perfect joint with the tooth-bone.

I use No. 1 gold, and prepare it by cutting it in thin slices with a very sharp bistoury, varying in thickness from 1-64 to 1-16th of an inch (the latter to be used only in large cavities ; place the different sizes in separate boxes, on clean white muslin, and cover them with a piece of glass, secured from any movement ; cover the box tightly, and it is ready for use at any time by taking them out and annealing only what is needed for each particular case. I find these leaves or slices to work fully as well as any gold fresh torn from the cake, for they are kept free from the air and dust, and are always ready for use. In filling an approximal cavity, I commence in the usual way to pack the gold at the cervical wall down and around the sides to the lower point of the cavity, filling up the centre last. It is very gratifying in using the bur points with the first layer to find how readily the gold packs in the groove, and is so fastened without holding it there, as though it were glued to the dentine. The adaptability of this gold to very delicate, frail walls, enabling us to preserve teeth that could not be safely filled with the pressure required with gold foil, has been so well explained by Dr. Dwindelle, in his pamphlet on "Watt's Crystal Gold," in 1855, and has been so well demonstrated by him and others, that I need not enlarge upon this point.

I have been using, the past year, Wolrab's gold cylinders to line the walls of cavities before introducing the crystal gold ; burnishing the cylinders around the margins with smooth points ; then going over the foil with small serrated instruments and stippling it ; then packing the crystal upon it. It adheres readily and works very satisfactorily, making a tight joint with the margins of the cavity.

It is of vital importance that crystal gold should be worked only in thin layers, which can be perfectly imprinted into the previous layer, and not in large masses, which only condense and pack on the surface, and are not welded, or joined, to the previous layer. This is the rock on which many operators have split in trying to do too much with it—to work it as they would soft foil. Especially was this the case for some time after its first introduction to the profession. Although the gold was right and the instruments were good, operators failed by improper manipulation, and therefore condemned the gold and abandoned it *in toto.* It will therefore be borne in mind that crystal gold packs solid from the bottom of the cavity to the surface, and that there is no need of after condensation, except upon the surface, to finish up and harden the last layer and remove all plugger-marks.

Injury is often done to crystal gold fillings by trying to condense with automatic or mallet pluggers, causing the top layers to loosen and scale off. The only safe instruments are the hand-pressure, supplemented in some cases with a small weight of brass or steel about one inch long, and one-half an inch in diameter, made to fit the top end of the pluggers, and removed at pleasure. This enables the operator to gently and rapidly tap the first layers around margins in the grooves of the cavity. Serrated instruments have been used, and can be used, in manipulating crystal gold, by care in pressing the layer of gold to its place with a bur, and then going over every part of the surface with the serrated point; but it takes more time, and the instruments very often chop or cut up the crystals, and go through it, making imperfect work. Instruments with single points, or two points, are useful in testing the filling around the margins, when the cavity is full, to find any soft spots. Before burnishing, I proceed to burnish thoroughly every part of the surface with a small-pointed burnisher where the filling is accessible to it; then file, and finish down to the desired shape, repeating the burnishing at intervals after each dressing, or filing, using the same implements as were used in contouring the tooth, being careful not to mar the tooth-surface adjoining the filling. Where the surfaces of contour fillings are so close to the adjoining teeth as not to admit the paper strips, I then use Dr. Brown's metal finishing strips with silex as the most effective thing I know of.

Dentists who have used this gold have sometimes noticed a reddish-brown discolouration soon after the fillings were put in, and were alarmed on account of it, attributing it to impure gold; but it was soon discovered that it was hard burnishing with a soft steel burnisher, so that the particles of steel clung to or were imbedded in the surface of the gold and oxidised. This, however, was soon remedied by the introduction of burnishers of bloodstone and agate. But in those early days of crystal gold, the prejudice against it was not entirely removed, and some were afraid to use it thereafter.

I have avoided in this paper making comparisons with other forms of gold, as unnecessary and unprofitable, for our practice is so varied, and the most of us are so well settled in our methods and use of the different forms of gold, that it is well for us to make haste slowly ; for I know that good work has been done and is done with the old stand-by gold foil, and it has served the profession well.

I have endeavoured to give you only a plain, practical talk upon a subject in which I have a very deep interest, and one that I thought not quite clearly understood in all its points by some of our profession ; and while I have entered into minute details, it has seemed unavoidable in order to present the proper working of crystal gold and the beauty of a crystal gold filling when complete. This has been my favourite filling during most of my practice since 1855, when Dr. A. J. Watts (then a resident of Utica) first brought me a sample of his gold for trial. I at once adopted it, and have had cases of fillings put in at that time doing service to-day. While I have used foil of different kinds and forms successfully at sundry times since, yet I have generally come back to my first love with greater admiration, because she has helped me through so many difficulties, and proved so royal a friend, that it is only a labour of love for me to present her to you this evening.

Reflections from the Surgery.

UNUSUAL CASE OF COCAINE-POISONING.

(Under the care of Dr. JAMES MAGILL, Surgeon-Major Coldstream Guards.)

THE following case, recorded in the *British Medical Journal*, is of especial value at the present time, when cocaine is being used so widely and recklessly.

The employment of Cocaine is now so general, and its advantages so great, that it would seem to be the duty of every surgeon to record any untoward or unusual symptom produced by it.

On January 31st, Dr. Magill, intending to slit up the prepuce for phimosis in a Guardsman of fine physique, injected one grain of cocaine dissolved in a few drops of water into the foreskin. Returning to the man's bedside in a quarter of an hour, Dr. Magill was struck by the patient's extreme pallor, and did not proceed with the operation. The patient complained of pain about the præcordia. His pulse was very slow and most irregularly intermittent (quite unlike the feeble wave which is felt in the radial when ordinary syncope impending), but the apex-beat was distinct. This grave condition lasted about twenty minutes.

From an examination of the numerous published records on this subject, in would seem that toxic symptoms have followed the administration of cocaine in doses almost infinitesimally small, as well as when a larger quantity has been used, the time of the onset of these phenomena being also most variable. "A few drops of a 2 per cent. solution" are reported to have caused alarming results (*Journal*, January 9th, 1886). Again, as far back as November, 1885, seventeen cases in ophthalmic practice were collected by Dr. Ziem, of Dantzig, in which serious effects followed the introduction of very minute doses into the eye (*Journal*, November 21st, 1885) ; while in several instances the injection of one grain hypodermically has brought on faintness, vomiting, etc. On the other hand, most surgeons agree that, for the production of complete insensibility, one grain is the minimum which is necessary, as a general rule. One operator mentions having used 14 drops of a 10 per cent. solution in a boy, aged 8, who had disease of the heart; a second injects 2 grains at once ; and a third expends 4 grains at a single time —all with the best results ; while a remarkable instance of the amount which can be taken is given in the *Lancet* of December 18th, 1886, where a patient (the subject of morphinism) is recorded to have survived the hypodermic use of 23 grains in one day.

The foregoing facts suggest the following inquiries : Is there any way of recognising those who would be likely to bear cocaine badly ? Is rapidity of absorption a factor to be taken into account ? Are its occasional ill effects to be put down to personal idiosyncrasy, for want of a better explanation?

The subjects of the toxic influences of this drug have in so many instances been patients in feeble health or women, that the case narrated above appears worthy of publication.

DEATH OF MR. JOHN B. BELISARIO.—We regret to announce the death of the son of the well-known and much-respected Dr. John Belisario, of Sydney, New South Wales. Mr. Belisario was a student at the Pennsylvania University, and was popular both among pupils and teachers. He died of acute Bright's disease, after only a few days of illness.

British Journal of Dental Science.

LONDON, APRIL 1, 1887.

PROSECUTION NOT PERSECUTION.

Among the vast efflux of material which go to fill the editorial waste-paper basket are communications from all manner of sources, but having one common theme. The correspondents in question draw attention to some heinous infringement of professional etiquette, or, still worse, to acts stepping dangerously near the toes of the law. In every case it is said A. or B. is manifestly an ill-doer, and ought not his departure from the laws of right to be punished ?

Our correspondents, as practical men, suggest prosecution. One case may be, that a certain one, neither having qualification, nor being duly registered, calls himself dentist, and cracks persons' jaws for his personal benefit, receiving guerdon for his evil courses, but not, unfortunately, the guerdon his recklessness merits. Another time it is that our attention is called to a flaring handbill, in which is set forth, in noble black print, the statement that "Mr. Blank, being the only truly scientific dentist, possesses a secret method of tending oral diseases, whereby the said Mr. Blank is able to offer to his patrons unrivalled dentures, at charges which will bear comparison with store prices."

Now, of course, Mr. Blank is a quack and a charlatan. His secret method, like himself, is all a swindle ; but, nevertheless, his neighbours see with indignation that a purblind public goes to him, and neglects them, and "hence these tears" and complaints. Such things ought not to be, undoubtedly; but they do exist, and so we must look round for the best means of getting rid of them.

Two species of counsel may prevail. The hot-headed one which quixotically runs atilt against everything outside its own, sometimes rather narrow, code of ethics; and the other, which has for its basis less fire and dash, but more Machiavelian wisdom. Men obtain their ends in two ways; some *take* it, but to do so, they must often use great and unpleasant violence, and make themselves unmitigated nuisances to the world at large; and some *get* it. These last are versed in history and knowledge, and have learned how little force and compulsion can do, and how much waiting and watching for opportunities will effect. Those who do run amuck are inexperienced, and usually fail utterly; the man who waits, never, in the end, is worsted.

So it is with the policy of prosecution of offenders against dental laws, whether written and incorporated within the Acts referring to our profession, or such as form bye-laws of the Colleges, or those unwritten edicts which constitute the code of ethics to which all respectable dentists bow allegiance; if pushed to the degree of persecution, it fails wholly in its object. The law should not only be feared, it should be respected.

Now such a desirable state of affairs can only arrive when those under the law recognise that it is only put into force against genuine offenders. Many there are who come under the legal bann through force of hard circumstances, who would be only too pleased to hold fast by the best traditions of their profession, but who have been unfortunate, and in a weak moment have listened to evil counsels and plunged incontinently into the abysses of "queer practice." Prosecution of such men only too often confirms them in their ill-courses, and impresses upon their minds the idea that theirs is a hard and cruel fate, and that the remorseless blood-hounds of persecution dog them in the downward path. Help and kindly advice would, in these cases, do good, would prove infinitely more beneficial than prosecution. Were men in trouble aware of any central bureau where they could seek aid and counsel, we should hear of fewer prosecutions under the Dentists' Act. Of course there are, and always will be, a certain number of men so bent upon wrong-doing that no resource is open save to appeal to compulsion and terrorism. As a rule, however, a man who resists timely counsels snaps his fingers at pains and penalties. The *personal* influence which students submit to from favourite teachers is missed in their subsequent career. Unless very strongly imbued with *esprit de corps* the average student goes forth into practice, perhaps, with few friends, and still fewer advisers upon whose honest judgment he can rely. He finds himself making comparison between his own tardy advancement and the rattling effrontery of an advertising neighbour, forgetting that swagger and dash are part of the charlatan's outfit. To "learn to labour and to wait" proves a very hard, rugged lesson for the average man, and the more so when he feels the isolation and unfriendliness which are almost inseparable from those who set up among strangers and are slow at making friends. Prosecution is, like all infliction of pains and penalties, a confession of weakness. The law exists but for checking evil doings ; what organisation have we for encouraging those who desire to do right ? Surely this is needed more than all else ; many may be saved from bad modes of practice and questionable deeds far more than would be deterred from fear of punishment.

COCAINE NERVE PASTE.—Dr. Kirk employs the following formula for a preparation for devitalising dental pulps, composed as follows : ℞.—Acid. arsenios. pulv., cocaïnæ hydrochlorat, āā gr. xx ; menthol cryst., gr. v ; glycerini, q. s. to make a stiff paste. This paste he finds more reliable than the usual arsenious acid, morphine and creosote preparation, and to be free from any undesirable qualities.

ASEPTOL IN CHRONIC GINGIVITIS AND PYORRHŒA.—A three per cent. aqueous solution of aseptol injected between the gums and teeth every three days for a couple of weeks will reduce chronic swelling, arrest the flow of pus, and restore the gingival margins to their natural shape, and cause them to be free from tenderness.

A NEW DENTAL DEPARTMENT IN ERLANGEN.—The University of Erlangen, Germany, has recently opened a dental department.

GLYCERINE is a better means of moistening finishing burs than the more usual oil; it is both more agreeable to the patient, and prevents clogging.

TESTIMONIAL TO MR. W. H. WAITE, OF LIVERPOOL.—We are happy to find the profession is responding so liberally to the fund now being raised to present a testimonial to Mr. Waite. Mr. Waite, who is retiring from the active practice of his profession owing to failure of sight, has been long known through his active services on behalf of the British Dental Association, rendered to the Midlands Branch of which he was Secretary.

TREASURERSHIP OF THE BRITISH DENTAL ASSOCIATION.—Mr. James Parkinson's retirement from this post has been followed by the appointment of Mr. Frederic Canton, the ex-Secretary. It adds to our regret to learn that Mr. Parkinson's retirement is due to the uncertain and unsatisfactory state of that gentleman's health. Mr. Canton, already a tried and esteemed servant of the Association, will take all well wishes with him in his new work.

ADDENBROOKE'S HOSPITAL, CAMBRIDGE.—The recent founding of a Dental Department, and the election of two dental surgeons to Addenbrooke's Hospital, has given rise in Cambridge to considerable discussion and animation. The Governors were not unanimous upon the desirability of establishing a dental department, but the objections urged were based upon expense involved. Three candidates were nominated for election: Dr. G. Cunningham, Mr. Alfred Jones, junr., and Mr. W. A. Rhodes. Addresses were issued and advertised; for this is the way they do things at present in Cambridge. The result of the poll was that Mr. Jones and Mr. Rhodes were elected.

Dr. Cunningham's failure will, we opine, be more a matter of regret to the friends of dental education in Cambridge than to himself. It is very doubtful whether two dental surgeons will be able to conduct properly the work of a dental department at Addenbrooke's.

To Match Old People's Teeth.—To match the incisors of elderly people when the teeth are dead or dull, the plan commonly adopted was to rub the surface of the artificial tooth with sand-paper ; but an easier way is, says the Editor of *Items of Interest*, to wipe over its surface with a little fluoric acid; this took off the gloss, and left exactly the smooth, dull surface required. Owing to its property of dissolving glass, the acid must be kept in a gutta-percha bottle.

To Roughen a Smooth Broach.—*Items of Interest* suggests the barbs on the broach we buy occupy as much space as the broach itself, so that it will not enter many of the delicate root canals. Take an untempered, smooth broach, or form one from fine piano wire, and draw a sharp separating file lengthways of the broach, and you will soon have little grooves the whole length of the broach, which will assist to catch the pulp in the root canal. It is also good to hold cotton twisted around it.

What are the Duties of a Dentist ?—Dr. John H. Coyle, of Thomasville, Ga., says, in the *Archives of Dentistry* :—

The arrest of caries by filling or otherwise,
Extracting teeth and controlling hæmorrhage,
Regulating teeth,
Treating and filling root canals,
Treating odontalgia,
Prevention and cure of alveolar abscess,
Removal of salivary calculus and cleaning teeth,
Treating diseased gums,
Restoring lost teeth.

The above belongs to the work of the dentist. Anything beyond that belongs to the domain of the physician or the oral surgeon.

American Dental Societies and English Dental Societies.—If we were to gauge the fraternal feeling among dentists of different nationalities by the number of dental societies and the frequency of dental meetings, America would be far in advance. There are probably more dental associations in and immediately about New York City than exist in any other nation of the world. There is an intense thirst here, both to obtain and to give information on professional subjects, and it is to this fact that American dentistry owes its high standing. When a practitioner of any reputation or professional standing there has made an advance, or devised a new method or implement, he knows no rest until he has made his brethren acquainted with it. The American journals are continually filled with descriptions of new appliances and modes of practice, and in this they are in advance of those of any other people. There is so much of this intercommunication of ideas, that journals are continually multiplied. There are but three exclusively dental journals published in Great Britain. There are over twenty in America. There are eight (we think) dental societies in England. Caulk's Annual enumerates over one hundred in the United States. Nor, adds the *Independent Practitioner*, is it in number of societies alone that the American soildality is peculiar. The meetings are of an eminently practical character. English meetings are more decorously conducted; English dentists look more carefully after ethical matters, and at their meetings discuss questions of a broader scientific character; but the American clinics and practical demonstrations are almost unknown in England, and, in fact, are considered rather *infra. dig*. As a consequence, English dentists know more of general science than their American brethren, but less of practical dentistry.

Vagaries in Dental Eruption.—From Churchville,

N. Y., we (*Items of Interest*) have the following remarkable case of the eruption of a full set of teeth before the sixth week of age: From its birth the child has caused anxiety and care: sleeping, moaning and crying most of the time. The doctor came when the child was six weeks old, and said: "Strip that child to the skin, and let me examine it thoroughly, and see if I can find any cause for its restlessness. I fear, however, the trouble is in its head." After having looked him all over, he said: "He is a sound baby, so far as I can see. Do you think he may have a sore mouth? Let us look." When lo, and behold! the child had a full set of upper and under teeth—the whole twenty-eight—and fully developed. They looked like two sets of artificial teeth put together in your hand, handsome and perfect. There is a thin skin that is not cut through yet, but so transparent that every tooth is fully visible, and they are entire in length. The doctor said he would cut it, but I said, no; nature has done marvellously so far, let her finish her work. The skin looks like that on beef suet, only not so thick. These teeth were erupted much earlier than six weeks. When it was four weeks old, I said to his mamma, "Where does he get that prominent upper lip? He looks just like persons do when they first put in false teeth." She laughed, and said, "Well, he does." We all now incline to think they were there at birth.

In contrast, we quote the *Dental Review* (Chicago) as follows:—"A case of third dentition is reported in Schönbrunn, Silesia. It is in a man 82 years of age, whose snowy locks are being replaced by black hair. So far, eighteen teeth are erupted and the others are in the process of eruption. Hufeland mentions two peculiar cases of a similar nature. One, Helena Gray, who died at the age of 105, had a few years previously erupted several teeth. The other, Maria Willamow, lived up to 1807 in the Russian village of Tokatille, and died at the age of 106. At 100 she lost the first tooth of her permanent set, at 103 the second, and thus on till all had been lost. Immediately thereafter the third set made it appearance, and at death she is said to have possessed healthy teeth.

DENTAL DISEASE IN SAVAGES.—Dr. Whitney, writing from Honolulu, describes the bleached skeletons of Kauai, and points out that it is a great mistake to believe the "noble savage" enjoys an immunity from suffering due to disease affecting his teeth ; in spite of the simple nature of his food and his outdoor life, he still has toothache. Dr. Whitney found both superior and inferior maxillaries, but none had complete dentures. This does not take into account the loss of anterior lower, and less frequently upper teeth, which were knocked out to express their grief at the death of a favourite chief, as was their universal custom in those times. Some had lost but one or two teeth ; others the greater portion of the molars, while not infrequently the anteriors showed decay upon their surfaces, or had left the traces of alveolar abscess. In several cases traces existed of great suffering, caused by the eruption of the inferior third molars, and in several by the superior. One specimen showed the ravages of salivary calculi, but as a general thing there was but little upon the teeth. No instances of erosion were met with, but many of the teeth were much worn by use, and as highly polished as they were the day their owners died. One specimen revealed anchylosis of the left side of the jaw. Several had exostosis. The effects of alveolar abscess were very frequently seen, sometimes leaving but a small opening through the outer plate of the jaw, while within the cellular portion would be cut out to considerable extent. Then, again, the whole outer plate as well as the cellular portion would be gone. In one or two cases it was thought traces of pyorrhœa alveolaris were found. Dr. Whitney found the antrum of Highmore varying greatly in the different skulls, sometimes occupying but a small place back of the first molar, and sometimes extending to the first bicuspid. The elevation caused by the roots of the molars was generally covered by a thin plate of bone, but in a few instances the roots were fully exposed. While he found a few instances of remarkable irregularity, on the whole the teeth were symmetrically set, the arches broad, and each tooth knuckled to its fellow in true model style, touching closely at a single point—the thickest portion of the enamel.

In uncovering two skeletons lying side by side it was seen that both were females, one much older than the other, and in them the peculiar dental irregularity of the older was exactly repeated in the other.

Popular Lecture to Children About the Care of their Teeth.—We hear with pleasure that Mr. Henry Moxon, the Dental Surgeon in charge of the North Surrey District School, Anerley, proposes to give a lecture on the 12th prox. to five hundred children of the Anerley School, on "How to clean the Teeth: the Advantages of Preventative rather than Reparative Treatment, the Detection of Decay, &c." This is, we believe, the first lecture of this kind which has been proposed, and its usefulness cannot, we think, be over-estimated. If the little hearers can be made to understand and appreciate Mr. Moxon's teaching, he will be enabled to do them a very great service. Mr. Moxon has kindly promised to give any information gained by him since his connection with these schools, to any professional men who will apply to him. The schools are near the Anerley and Crystal Palace Stations, on the L. B. & S. C. Railway.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

PYORRHŒA ALVEOLARIS.

By Eugene S. Talbot, M.D., D.D.S., Chicago, Ill.

A very large majority of persons over twenty-five years of age are to a greater or less extent affected by this disease. It is only since a comparatively recent date that the disease has been described, and efforts made to determine its pathology and treatment. Drs. Riggs and Mills, to explain the etiology, favour the salivary calculus theory. Dr. Rehwinkel taught that constitutional and hereditary causes were concerned in the production of the disease. Dr. C. G. Davis believes it due to low vitality and feeble vascularity. Dr. Rawls holds the opinion that a mercurial taint and the effects of chloride of sodium account for this pathological expression, likening it to scurvy produced by a salt-meat diet. Dr. L. C. Ingersoll believes sanguinary calculus to be the origin of the trouble, and claims that it is impossible for salivary calculus to be deposited at the apices of the roots, but that the calcium salts which are in solution in the blood are carried directly through the capillaries and deposited upon the roots of the teeth. Drs. Witzel, Arkövy, Black, and others believe pyorrhea to be a specific infectious disease, from the fact that the seat of the lesion and the exudate are filled with living micro-organisms. Dr. J. D. Patterson expresses the opinion that it is a catarrhal condition.

The alveolar processes forming the alveoli are rich in blood-vessels. The periosteum is a thick, fibrous, vascular tissue lining the alveoli and continuous with the periosteum, covering the maxillary bones and receiving its nourishment through the alveolar process. The peridental membrane covering the cementum of the teeth and extending from their foramina to their necks is finer in texture and more feeble in blood supply than the periosteum. It receives its nerve and blood-supply partly from the nerves and blood-vessels at the apical foramen and partly from the submucous tissue of the mucous membrane, which is continuous through the nares, fauces, and the cavity of the mouth, and extends to the necks of the teeth. The mucous membrane is composed of two layers—the submucus layer or true membrane and the epithelium or false membrane. It is the submucous layer which comes in contact with the periosteum, and bears the same relation to that tissue as the peridental membrane does to the periosteum in the alveolus. This part of the mucous membrane is continuous with and sends blood and nerve supply into the peridental membrane. The epithelial or outer layer of the mucous membrane extends only as far as the necks of the teeth. It will be observed that the same periosteum which covers the bones of the face lines the alveoli; that the fibro-vascular layer of the mucous membrane covers the periosteum, is continuous with and becomes the peridental membrane.

This consideration gives support, the writer thinks, to Dr. Patterson's theory of catarrhal origin.

Mucous membrane is very liable to inflammation from apparently trivial causes.

The mucous follicles, which are plentifully scattered over the surface, increase its susceptibility to inflammation. It is at the point where its fibro-vascular layer blends with the peridental membrane that inflammatory action produces special mischief; this is because neither the alveolar walls nor the tooth-structure are yielding, and the pressure of the inflammatory products cuts off the blood supply from the peridental membrane. Hence innutrition and sloughing of the peridental membrane, and an attempt at elimination of the dead tissue by suppuration. The disease may, and frequently does, exist in an incipient stage, without any accumulation of pus about the necks of the teeth; but when the gums become thickened and bleed freely, nourishment is cut off, and the peridental membrane and alveolar process undergo change. If stimulation of the gums is kept up by the tooth-brush, favouring absorption of the gums and alveolar process, the inflammatory products are carried away without the appearance of pus. But if the gums and alveolar processes are not stimulated, and absorption does not take place, the peridental membrane cannot expand, but sloughs away, and pockets containing pus form about the roots of the teeth.

Predisposing and exciting causes of this disease are a perverted condition of the secretions, low vitality, sanguinary calculus, and local causes, such as catarrh, fistulæ, salivary calculus; irritation from foreign substances, such as detached bristles from the tooth-brush, too great friction in brushing, injudicious use of the tooth-pick, the use of ligatures and regulating apparatus, application of the rubber dam and clamps, artificial dentures and regulating plates, accumulation and decomposition of food under artificial dentures and at the necks of the teeth, drugs which over-stimulate the parts, the use of tobacco, fillings extending beyond the cervical margins, digestive derangements, contagion from unclean instruments, and improper mouth-washes and tooth-powders, especially charcoal. The devitalisation of pulps and the filling of roots, which throws increased work upon this membrane, may favour this pathological condition.

The disease, the writer thinks, is contagious, and if one affected tooth is allowed to remain in the mouth, all the rest of the teeth are endangered.

The treatment indicated includes a systematic and thorough cleansing of the mouth, to remove food débris and salivary

nough friction from the brush, however,
ction. In the early stages of the disease,
mouth-wash may be of advantage. If
has been absorbed, exposing the apex of
ould be removed. If a tooth have two
e or two of them be dead, the dead ones
f pus has collected around the teeth, the
d be gently scraped to remove all rough
edges, our new granulations, as well as bring the alveolar border on a level with the peridental membrane, so that the inflammatory products may be readily thrown off. But this operation should be very carefully performed, to avoid injury of the periosteum. If the teeth, especially the anterior ones, have become loose, while the alveolar process and membrane remain intact for one-half the length of the root, the teeth should be ligatured to prevent vibration and irritation. The instruments for removing the alveolar edge in the treatment of pyorrhea should be specially adapted for that purpose, with rounded shanks and bent at suitable angles. After trimming the alveolar border, the parts should be syringed with tepid water, and subsequently with stimulating and astringent washes.

THE INDEPENDENT PRACTITIONER

"PYORRHŒA AND SPONGE-GRAFTING."

By Dr. Wm. H. Atkinson.

Correct diagnosis was the first pre-requisite : that there was no real pyorrhœa without loss of attachment of the *ligamentum dentium* ; a flow of pus was always an evidence of nature's to form new tissues. Pyorrhœa should be cured by destroying the microbes which prevent granulation ; that an imperfect elimination of urea was an antecedent of pyorrhœa ; that traumatic pyorrhœa was the resultant of the presence of foreign bodies in the alveolus, as particles of bone, splinters of wood, etc. These must be removed and the pockets sterilised. Calcareous deposits were sometimes present, but if present they were to be removed and their reformation prevented. Many parisiticides which would destroy microbes would cauterise. Nitrate of silver would afford protection by supplying an outer wall. Non-sterilised pockets might discharge pus for an indefinite length of time. He would prescribe tonics, as sulphate of quinine. For local treatment :—

1st. When there is slight recession, and no discharge, use elixir vitriol.

2nd. When the loss of attachment is greater, use Aqua Regia, 1 to 3.

3rd. Where the loss is very great, the gums dark, with discharge of pus and bloody serum, use the carbolised potash paste, known as Robinson's Remedy, not allowing it to overflow on the lips or cheek.

4th. If the roots were much exposed, and there is no opportunity for covering in the pockets to induce new growth, he advises sponge-graft. The sponge is wrung out of bi-chloride of mercury. We have advanced by stages from the actual cautery, boiling oil, red-hot iron, for the arrest of hæmorrhage, followed by the irrigation and drainage of wounds, to the transplanted skin and epithelial tissue. This suggested some material to take the place of lost substance. Sterilisation or Listerism was a great step in advance. Then came the sponge graft. A gaping wound, filled with sterilised sponge, and covered over with plaster to support and prevent exudation of blood and serum, will heal by first intention if left undisturbed. All germs must be destroyed. There is a large list of germicides, but bi-chloride of mercury is the best. Proper discrimination must be used in judging of the favourable or unfavourable progress of the healing process.

Describing how to protect the graft, he says: After thorough removal of all deposits, tie loose teeth firmly, having the occlusion perfect ; then take an impression and make a cast. Wherever the tissue is missing build it up with wax, rather higher than the new growth is wanted. Make a cast and strike up a plate, making a tight pocket which will fit the teeth closely and prevent anything from escaping ; put the sterilised sponge inside of this pocket. In larger places, as from removal of tumours or morbid growths, cover in with flaps of skin, leaving the clot of exudation. It does not form scar-tissue. It is reproduced tissue. Do not undertake to buy sterilised sponge. Buy Surgeon's fine sponge, see that it is free from all foreign elements, and sterilise by dipping in a solution of one grain of bi-chloride of mercury to one ounce of distilled water at 130 deg. Fahrenheit. At or above 133 deg. the sponge will shrivel, and 160 deg. will destroy it, so that it is not fit to use. If the sponge is not thoroughly sterilised, the wound will not heal by first intention. Do not remove the sponge for any cause whatever. If pus should ooze from one corner, or the sponge get black or green, and hard, where pabulum has not penetrated, wipe off the serum, and with fine pointed scissors cut off the discoloured portions till red pabulum (arterial blood) is reached. Sterilise the sponge again, fitting a little bit into the vacant space, not disturbing the adhering portions. Use simple common sense. "Any man that can fill a tooth can be a good surgeon."

OHIO JOURNAL OF DENTAL SCIENCE.

THE ENGINE BURNISHERS AND BAND MATRIX IN FILLING WITH AMALGAM.

By H. G. HUSTED, Oberlin, Ohio.

A FREQUENT cause of failure in amalgam fillings is improper packing of the material into the cavity. If improperly done, the filling will be more or less porous, frail at the edge, and easily broken, especially when the filling is very large, and two much mercury is used in preparing the amalgam.

The writer has used smooth engine burnishers, instead of the ordinary amalgam pluggers, and he finds the filling is more dense, and has stronger edges.

In large proximal cavities, if a considerable portion of the tooth must be cut away, the band matrix is quite indispensable, as the burnishers can be used to the best advantage where there are either natural or artificial walls to work against. A simple, satisfactory, and inexpensive band can be made and adjusted in two or three minutes. From a sheet of very thin tin cut a strip from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch wide and $1\frac{1}{3}$ inches long, bend it in the form of the letter U, put it around the tooth close to the gum, and bring the ends together with a pair of flat nose pliers, this will give the size of the tooth. Remove the band, trim off the projecting ends, and solder over a spirit lamp, using a very small piece of ordinary tinner's solder. Adjust the band to the tooth, carrying it well below the cavity. If the band is properly formed and adjusted in a case where the cavity extends below the gum, it will effectually shut off all leakage of blood and saliva.

The rubber dam should now be adjusted, and the cavity being properly prepared, we are ready to insert the filling.

In preparing the amalgam, use only sufficient mercury to allow of its being collected together into a mass, after being thoroughly ground in a mortar. Being provided with suitable engine burnishers, proceed to insert the filling, using small quantities at a time, and condensing thoroughly, especially near the edges. The rotary motion packs the particles of amalgam together and forces out all excess of mercury, and with less hard pressure than can be accomplished with hand instruments. When the cavity is nearly full, use amalgam that is very dry, or even the dry powder itself; this will give a very hard surface. To remove the band, first separate it at the point where it is soldered, thus avoiding any danger of breaking the filling.

LABORATORY INQUIRIES ANSWERED.

By L. P. Haskell, D.D.S., Chicago.

Plaster Casts, etc.

The following questions are asked and answered:

1. *What changes do you make in the plaster cast?* Except rarely, when the entire palate is yielding (then fit the plate to the entire palate), the plate should be raised over the hard palate with a thin film of wax, because the membrane yields elsewhere, especially the alveolar ridge; for, unless this is done, the plate will, in time, bear hard, irritate, and rock. This is a better plan than *scraping* from the impression; in the *cast* you can see how and where to make the change. Then if the posterior portion between the centre and corners is quite soft, scrape away slightly, extending forward perhaps ½ inch, *leaving undisturbed about ¼ inch in the centre*, where it is hard.

2. *Do you ever use "air chambers?"* Not in full sets, and seldom in partial sets.

3. *What conditions are necessary to ensure sufficient adhesion, and is a very strong adhesion a necessity?* To ensure sufficient adhesion, the plate should fit the entire surface (except the hard palate), and be in close contact with the membrane. The test is to press the plate firmly to its place, and even if that fails in a rigid mouth, it is of no im-

portance; for when the work is completed, and properly adjusted to the lower teeth, there will be no trouble with the adhesion. The plate should fit well enough to exclude the air at the rear, and this is seen by wetting the palatal surface of the plate, before placing it in the mouth, and then *pumping* with the finger ; watch if air bubbles escape; also be sure the plate does not press *too hard*, so as to irritate and throw off. The plate should be as high as it can be worn, especially over the cuspids and the maxillary prominence.

4. *What changes are needed where the process in front is all gone, as is often the case?* None where the process is all gone. The thickened, movable membrane has been pressed into a position that has become normal.

5. *In such cases, what must be done to ensure the best results?* Everything depends upon the *articulation;* the front teeth should not touch, a margin should be left to prevent it in the future, *except* when the lower jaw is very prominent, then the upper teeth should close inside the lower, and if they touch it will be an aid. The pressure should be not only back of the anterior teeth, but the bicuspids should be set well *inside*, so that the outer cusps are inside the lower outer cusps. A lower wisdom tooth should not, when fallen forward so as to present an inclined plane meet the upper teeth, as it only crowds the plate forward.

6. *What changes are needed in lower casts?* Very little. If the ridge is thin and flexible, scrape from the impression, so as to enlarge, and thus throw the pressure more upon the sides. Extend the plate a short distance only on the curve at the condyle; too many plates are made too long.

7. *On what does their success depend?* The success of a lower denture depends upon an accurate impression; not being too wide, or extending too low down upon the outer or inner sides. The plate should be so trimmed that the lips can be raised with the fingers, and the tongue raised to the palate, without raising the plate. The articulation must be exact, and the posterior teeth not *too long*, so as to crowd the plate into the gums.

NEXT year the University of Bologna, Italy, which is the *alma mater omnium almarum matrum,* will celebrate the 800th anniversary of its existence; this school of sages is the oldest in the world, having been established 300 years before Heidelberg. Eight hundred years ago at this University, Emperors, Kings, and even the Popes, listened to legal discourses as then expounded by the renowned Jurist Warnerius.

Literary Notices and Selections.

THE INFLUENCE OF CULTURE ON PROFESSIONAL SKILL.*

By THOMAS FILLEBROWN, M.D., D.M.D.

EVER since Arachne tried her skill with the gods, and brought down the wrath of Minerva for her temerity, manipulative skill has been the active means of the world's material progress. While agriculture has always been, and is, the source of the world's greatest wealth, and furnishes the essentials of the people's support, handiwork has ever ministered in so many ways to personal comfort, has created so much of wealth, and aided social progress to such an extent as to give it the first rank as a civilising force. Skill clothes the person, shelters from storm, defends against the strong, creates machinery and sustains its busy hum, delves in the earth and brings forth its treasures and converts them into forms for comfort or ornament, or into forms of power to better subserve the wants of the working and waiting millions on the earth. It furnishes the means of interchange of the productions of different parts of the earth. It makes it possible to send manufactured commodities to distant regions, and maintains social intercourse between all parts of the world. It executes works of art to please the eye, and constructs articles of vertu to satisfy the taste.

Emerson says, "There is no division in art as between fine art and practical art." Whether art be subject to such division or not, there is a very radical difference in the products. On the one hand, we have the conception of the imagination exhibited in sculpture and painting, conceived by the brain and executed by the hand of the artist; on the other, the practical results shown in the mill, the forge, the steamship, the railway, and telegraph. For our present purpose we need not discuss such division. At the present time we deal with the skill which makes the construction of both possible, and seek to find how such skill has been influenced for better or worse by culture of the mind.

Culture and manipulative skill have ever been considered as something apart from each other, and until comparatively recent years were considered almost, if not quite, antagonistic. The consideration of culture, as such, is of recent origin and of slow growth, yet it has now gained ascendency in the minds of the thinking and ruling classes, and firmly holds its sway.

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* Annual Address before the Massachusetts Dental Society, at Boston, December 9, 1886.

As no man is wholly without skill, nor entirely without culture, it is difficult to properly estimate in him the influence the one has on the other. Constructive skill can exist without culture or mental ability, as is shown in the web of the spider, the honeycomb of the bee, the nest of the bird, and the cocoon of the silk-worm. Skill alone has no originating power; it does the same thing in the same way, time after time, through endless repetitions.

The very name of the ages show the intimate connection of the useful arts with the progress of civilisation, and mark the epochs of the world's progress in culture as well as art. In the crude age of stone, men were savages; they had no accumulation of property, no division of labour, no social organisation, no written laws, no tools better than stone. The next era was marked by the discovery of bronze, and the world emerged from a state of savagery into the enlightenment of barbarism.. Bronze afforded better weapons for war, and made cultivation of the soil possible, and people began to have a locality and some attachment to a home. Barbarism discovered the art of quarrying and cutting stone, of spinning and weaving, of brickmaking, and left to the world as its monuments the Pyramids of Egypt, the Temple of Karnak, the Sphinx, and the Obelisks. The iron age produced the alphabet and a refined taste in literature and art. As the individual begins his existence in the utmost helplessness, ignorance, and speechlessness, and through long struggles of years becomes the man, so the race struggled through ages of savage ignorance and barbarism before it could be entitled to the name of a people.

Until very recently, manipulative skill was considered menial, and was not practised by any person who presumed to any mental or social attainments. Plato had no place for the artisan in his republic, and Socrates held him in contempt. The artisan of the middle ages was fit only to be a slave, and lived and died as such. The wonderfully fine work of Egyptian temples and Roman monuments was the handiwork of slaves, directed by the cultured brains of the priesthood. The composition of society at that time placed all knowledge and culture in the priests. The activity of the people was in the army. The plodding, working masses were slaves, and to this class was left the menial work of the artisan. At the present time, though the artisan is freed from slavery, yet throughout the world, especially the old, he is held to belong to a separate class, and to work is not considered the part of a gentleman. If an artisan rises to any considerable social distinction he is forced to ignore, in a large measure, his former position, or at least the practice of his calling. Manipulative skill, when needed to render personal service in a professional way, as in case of the physician and the surgeon —and also our own calling—has always been held in higher esteem, and been exempt from the odium attached to ordinary skill exercised on inanimate objects, and it is to such as these our inquiry is especially directed.

The progress of mental culture seems to be divided into three distinct periods—the savage, the barbarous or mediæval, and the modern or age of civilisation. During the first—called also the stone age—mental culture made hardly a beginning. Force was the only law known or acknowledged, and the best man physically was the best among his people. Saul was admired for his physical perfection quite as much as for his mental qualities, The middle ages showed great progress of the race. Agriculture was raised to a system, and became an honourable calling. Implements of bronze, and later of iron, made improvement in material warfare possible, and made it practicable for the higher conceptions of cultured minds to be worked out in the ornamental buildings of this age. During this period the alphabet came into use, and a refined taste in literature and art was developed; and here the connected story of culture-history begins. During the modern age culture has made rapid and great advances, and become widely disseminated, and the common people feel its influence in a great degree.

The term "culture" is used in quite a variety of senses. Its primitive sense, as applied to the mind, is to improve, enlarge, and perfect any single quality, talent, or taste, without reference to other powers. Applied in this way, it makes the man of one idea. One says: "Industrial art is the main force of culture," thus making culture an impossibility without art, and secondary to it. A prevalent idea is that knowledge of facts and things is culture. The truer idea is that knowledge makes culture possible. Facts are not science, but their classification makes science.

Matthew Arnold gives the æsthetic conception of culture. He says: "It is a pursuit of our total perfections by means of getting to know, on all matters which most concern us, the best which has been thought and said in the world." Again he says: "Culture is the study of perfection, and leads us to conceive of true human perfection as an harmonious perfection developing all sides of our humanity, and as a general perfection developing all parts of our society." He would have a cultured class, to which he professes to belong, whose aim, calling, and end is culture, whose hands are not soiled by toil, whose minds are not disturbed by the disputations of the day, or ruffled by interest in the vital questions of the hour. Home Rule has no need of them; war or peace is a matter of secondary importance, and they have no hand to raise for or against it. Tariff, free trade, revenue, and taxes are beneath their notice; and whether man shall be bond or free, ignorant or educated, rude or cultivated, is to them only an idea. For the working out of the many social problems, they have no practical suggestions to make.

Such a culture can hardly fail to lead to feelings so æsthetic as to lose all sight of reason or sense, and become only an unworthy dilettanteism, and lead one to become what culture so entirely condemns—a man of one idea. While the tendency of such culture is to draw apart from the world, the result, as conceived by Mr. Arnold, is far better. He says, further: "Culture, which simply means trying to perfect one's self and one's mind as part of one's self, brings us the knowledge that the really blessed thing is to like what right reason ordains, and to follow her authority." This is but another statement of the "law of liberty," a liberty always to do as one pleases, because one always chooses to do just the right thing, and only that.

M. Renan offers a sound reason for the existence of a cultured class: "The sound instruction of the people is an effect of the high culture of certain classes. Countries which have created a considerable popular instruction, without any serious, higher instruction, will long have to expiate this fault by their intellectual mediocrity, their vulgarity of manners, their superficial spirit, their lack of general intelligence."

While it cannot be denied that a cultured class, even as a special class, may do a work others cannot, the practical American mind appreciates more fully the cultured mind dealing with the practical definition of a cultured man, which

Mr. Arnold has given in his riper years, in entering the domain of politics, and clashing swords with the old gladiator Gladstone, and seeking to make the power of a cultured mind felt on the questions of the day.

Emerson's conception of culture seems to be nearer the true idea, nearer the needs of the human mind, and leaves not out the affections and passions of the human heart. Says he: "Culture is the suggestion from certain best thoughts that a man has a range of affinities through which he can modulate the violence of any master-tones that exert a droning preponderance in his scale." A definition worthy the subject and worthy the man. It makes culture not the end and aim, but the means by which a man makes the most of himself for other and better purposes, and better fits him for his work in life; not of unfitting him for it and withdrawing him from action and joining him to a separate class.

Culture redresses a man's balance and puts him at ease among his equals and superiors; it kills his exaggeration and conceit; it opens his sense of beauty. Culture enlarges the mind and increases its power of conception, both ideal and practical. Again I quote Emerson: "Culture corrects the theory of success. A topical memory makes a man an almanac; a talent for debate, a disputant; skill to get money makes him a miser. Culture reduces these inflammations by invoking the aid of other powers against the dominant talent."

The pest of society is the egotist. There are dull and bright, sacred and profane, coarse and fine egotists. "'Tis a disease that, like influenza, falls on all constitutions. This egotism has its root in the cardinal necessity by which each individual persists to be what he is. This individuality is not only not inconsistent with culture, but is the basis of it. He only is a well-made man who has a good determination. The end of culture is not to destroy this, but to train away all impedimenta and mixture, and leave nothing but pure power." A man lives a beggarly life who lives only to be practically useful—it is not enough to simply be the block to scotch the wheel; such a one knows little of the possibilities of life.

An early substantial education is the true basis of culture, "though some seem to culture born." If possible, every one "should have such opportunities for education and culture that they shall not feel at thirty or forty years that this which I might do is made hopeless through my want of weapons." Culture interests the man more in his public than in his private qualities, and makes a cheerful, intelligent face the index of a cheerful, disciplined mind. Culture enlarges the heart, makes one more polite, more just, more forbearing, more forgiving. Talents, knowledge, skill, are the uncut diamond; culture is the lapidary which grinds the rough into form and perfects the surface and angles which disclose its wondrous beauties and power. There are times when culture must be lost to sight, and what culture has done must be depended upon; times when action is called for, and the why it should be done, and what the result will be, cannot be considered; times when theory is of no avail and only action will serve. Gen. Weitzell, one of the most accomplished and best read men in the army, said to one of his officers, during the late war: "Do not stop to study theory in active campaign—now is the time to be governed by what you see, and not by what you read."

The daily duty of the professional man ought not to be burdened with the conscious thought of the literature and culture of his calling. This must be dismissed, and skill, steadiness and judgment, which are the results of previous training, must alone be depended upon. Anything less than this proves the want of the culture which is so much desired. Specialism without culture is limiting in its influence, dwarfing the intellect, shrivelling the social qualities, and lessening the influence of every such one among his fellowmen. It makes a man more selfish, more conceited and opinionated; his world revolves on a point, is suspended by a hair, and his horizon is limited to a microcosm. No man is with a mind large enough, or strong enough, or with heart warm enough to stand against its influence.

A notable example of this class was the late Horace Greely. Born with a mind which immediately grasped the problems of life and the living questions of the day, it jumped the ordinary course of training and spurned the slow process of mental discipline, and grasped by reading what generally is acquired by hard study. Politics was to him the end and aim of life, and the overthrow of slavery the principal object to be desired. He did a herculean work, and his name will be remembered for ever with gratitude by all lovers of freedom. But when the one cause for which he had laboured had triumphed, there was nothing of recourse left for him, and the last years of his life were tinged with disquiet, and his end saddened by disappointment.

Wendell Phillips, with all his gifts of birth, of intellect, of moral excellence and broad culture, was not proof against the paralysing influence of specialism. His long devotion to the promulgation of the principles of anti-slavery, and his life-long work as an anti-slavery agitator so absorbed him, that when the end came and the curse was removed, his work was done ; and from that day the fire was gone out from his eye, and his tongue lost its caustic sting. While his life illustrates the point of the subject, we will render all honour to him and feel that such a work was enough for one life, and the knowledge of such results reward enough for a sacrifice of all other ends or desires.

Benjamin Franklin illustrates the better class of minds. Born in poverty, educated in a printing office, possessed of a mind of such power that it might scorn the dull, dreary tread-mill of study, and grasp almost by intuition the facts of science and thoughts of literature for which ordinary minds must delve and struggle, he took upon himself the drudgery of study, set his mind to the labour of thought, and disciplined his faculties into training for the great and varied work of his after life. Instead of limiting himself to the routine of newspaper literature, he became successively the scientist, the statesman, and the philosopher, standing a peer among his fellow-countrymen, and challenging the respect and admiration of the world.

To rightly weigh the influence of culture, we must consider the influence of mind upon form and action. It is said in Plato's laws that "spirit precedes the form," and there is given an extended and acute logical argument to demonstrate it. To-day it is quite generally admitted in a little different form. The idea must precede the word, the conception must precede the execution ; the hand can go no faster than the mind thinks, and the performance cannot exceed the conception of the intellect. A person colour-blind cannot become a scenic artist, nor can a mind without perception of form and proportion make a sculptor. The ideally perfectly balanced man would have all his faculties and powers equally developed, no one showing any predominance, and would possess no controlling taste or talent to decide his course in life. Such a man in this active, specialised life, is fit only for a jack-of-all-trades, and very likely good at none.

While culture calls for the best development of all the faculties, it does not demand that all faculties in all minds shall be alike in strength and persistence. Nature does not make all minds equal or alike in thought or action. This would blot out individuality. It would make a James Watt or a Stephenson, or a Washington impossible, and the world would settle down into a stagnant mediocrity, or fritter away its power in perpetual strife and disorder, with the shadow of more than the dark ages hovering over it.

The age demands marked ability. Success demands the perfection of one set of talents. The shortness of life makes it impossible to cultivate more than this for practical use; but it is not necessary that all others be neglected until only an automatic monstrosity is the result. Culture demands that all faculties be used, that all tastes and talents be trained that a well-balanced course of studies be pursued; but it does not demand that one possessing a strong literary taste shall become a carpenter, or that a born philosopher must become a merchant, simply to develop a comparatively weak talent to make the individual well-balanced. This would be following culture for culture's sake to a degree beyond æstheticism. The leading talent must be the controlling force in life. The best life is so governed. The other talents must be disciplined to act as steadying powers to keep the mind on the track; must act as the side-guys of the suspension bridge, keeping it from being swayed by winds and torn from its towers, a complete wreck. Specialism is in itself so contracting that it needs the elevating, exalting, enlarging influence of other ideas to elevate it, and the power of other faculties to keep it within its true limits, and prevent its swaying the mind from the strong towers of common-sense.

The world's progress has been a constant witness to the influence of culture. The advance of the world, morally, socially or materially, has not been of even growth, but of uneven, intermittent strides, and each period of advance in mechanical skill has been the result of a time of mental activity and growth. On the other hand, when the minds of a people grew sluggish, or their thoughts diverted to selfish indulgence, or solely to the art of war, their hands forgot their cunning and their fingers lost their skill. After the Augustinian age, Roman Europe declined. It degenerated under despotism, and arts and sciences declined until, during the fifteenth century, intellectual paralysis prevailed; all arts, save the art of war, became lost arts, and Greece alone saved to the world what Europe had produced, but without the power to develop it. "Rome originated nothing. She gave to the world no new order of architecture, no new science. She invented nothing; for no important tool in any workshop, for no process in our industrial arts, are we indebted to Rome." Charlemagne, the prosperous ruler of the ninth century, divided his kingdom among his sons. Intellectual activity gave place to bodily comfort and appetite, and immediately material interests declined.

From the time of Solomon until the present, intellectual activity and virtue have proven the foundation, support and crown of art, science and material welfare. It is also true of individuals as of nations. No man of the past or present has risen to true eminence in any of the professions who was not both educated and cultured. The surgeon's skill with the scalpel is dependent upon and exceeds not the fineness of the perception of the mind, and the excavators, chisel and drill, in the hands of the dentist, can go only where the mind conceives and the thought directs. The hand intellectualises the body. "The hand is the symbol of man's power, for while the head wears the crown, the hand holds the sceptre. It grasps all instruments for our welfare, from the pen to the ploughshare."

No longer can one mind conceive the idea, and the unquestioning slave execute the work, but now every artisan must understand the theory of his handicraft. Professional culture is composite—mental and manual. The latter alone makes the unreflecting copyist ; the first alone the impotent dude.

In Massachusetts the maxim was early adopted, and has been continually enforced in every period of her history, that "the more cultivated a man's intellect is, the more productive is his labour and the better his life ;" and so long as the mind conceives before the hand executes, this must be true. It matters not where the education and the culture is obtained, in college or out, from private teacher or by one's own efforts and application. If it has produced the result of a well-informed and disciplined mind, the work is accomplished. The same is true of professional knowledge. It matters not from whence it comes if it is possessed. It is more easily gotten, and more surely, if the favourable surrounding circumstances of the college and professional schools are sought and improved. But if the obstacles be overcome and the results obtained without these helps, all honour to the victor. In the present, when educational institutions are at every one's hand, it is poor economy to take the longer and harder route of self-education. Few can do it. Associate education has great advantages. It affords opportunity for interchange of thought. It rubs a man against his fellows, and the friction of emulation brightens faculties and develops excellencies that, without it, would lie dormant through life. It stimulates to good works, and furnishes a large share of the discipline of mind and body, which is the essential principle of culture. No one can know the extent or fulness of his own knowledge until it is tried by comparison with others.

This discussion has brought afresh to our attention the fact, which, no doubt, appeared self-evident from the first, that, added to natural talents, education, discipline and culture are the elements of proficiency in every calling, and of success among polite people. The wide diffusion of knowledge, the keener observation of the masses, cause the demands on professional skill to be more exacting and the *ex cathedra* of the doctor to be less readily accepted.—*Independent Practitioner.*

Dental News.

ANNUAL MEETING OF THE NATIONAL DENTAL HOSPITAL.

THE Earl of Strafford presided at the twenty-fifth Annual Meeting of the Subscribers to the National Dental Hospital, 149, Great Portland Street, W. The Report showed that, notwithstanding the prevalent bad times, the receipts still kept at about the same level as in previous years, the patients' payments even showing a slight advance. The number of cases treated during the year was 34,721. Reference was made to the resolution of the Committee to admit registered medical female students to the practice of the Hospital, and in answer to a question, the Secretary said that the principal object of the Committee was to admit those ladies who intended practising in India in connection with the Zenana Mission. Votes of thanks were accorded to the Medical Officers, Treasurer, Committees, and Chairman; and in reply to the last, the Chairman spoke of his continued interest in the Institution, mentioning that one day last year he visited the hospital without notice, and not being recognised, he had an opportunity of seeing it in its every-day work, and that he was much struck with the great kindness and attention which was shown to the patients, and the admirable way in which everything was conducted. His Lordship concluded by thanking the medical officers, on behalf of the public and himself, for the great voluntary work which they were doing, and hoped for its long continuance.

EXAMINATION QUESTIONS

Set at the Royal College of Surgeons of England, at the written examination for the Diploma in Dental Surgery, on February 22nd :—

Anatomy and Physiology.

1. Describe the Tongue, its muscles, vessels, and nerves.

2. Describe the course and relations of the Internal Carotid Artery as far as the base of the skull.

Surgery and Pathology.

3. Give the causes, diagnosis, prognosis, and treatment of Post-pharyngeal Abscess.

4. Give the composition of Salivary Calculi, the symptoms which they occasion, and their appropriate treatment.

Dental Anatomy and Physiology.

1. Give a comprehensive definition of Teeth. What various purposes do they fulfil ? Mention instances of modifications of dental tissues met with in particular groups.

2. Describe briefly the Lower Jaw and the Teeth it contains in a nine months' fœtus.

3. Describe the relation of the roots of the Teeth to the Antrum. What changes occur in the form of this cavity from early childhood to adult age ?

Dental Surgery and Pathology.

1. What is Erosion of the Teeth ? To what causes is it attributed, and what can be done in the way of treatment ?

2. Name the Medicinal Agents used for application to exposed pulps, giving their therapeutical effect. Write prescriptions for (i) an alkaline aromatic Tooth-powder, (ii) an astringent application for the Gums.

3. What injuries to the Teeth and adjacent parts may arise from the use of Artificial Dentures, and how may these results be avoided or remedied ?

THE DEATH FROM SWALLOWING FALSE TEETH.

On March 7, Mr. Barstow, coroner, held an inquest at the Globe Inn, Lindley, on the body of Alice Lawton, twenty-seven years of age, wife of Stanley Lawton, of Union Street, Lindley, dyer, who died during the night of the previous Thursday from illness caused by her accidentally swallowing two false teeth.—Evidence of identification was given by the deceased's husband, who said that his wife died at twenty minutes past twelve on the Friday morning. His wife had eight false teeth. About three weeks ago, when he got home from his work at Bredbury, near Stockport, he was told by his wife's aunt that two of the teeth had become loose during the previous Thursday night, and had lodged in his wife's throat. His wife was in bed, and told him that she had swallowed two of her teeth and part of the roof, while in bed. She complained of soreness in the chest and throat, and was not able to swallow anything solid. Witness left home to go to Stockport on the Monday morning, at which time his wife seemed much better. Witness was telegraphed for on the Thursday night, and when he got home he found that his wife was very ill, and she gradually grew worse. He believed his wife swallowed the teeth while she was asleep, because she found them stuck in her throat when she woke up. He did not know that his wife had had any mishap with the teeth before.—By a juryman: When the teeth were new the roof was whole, but it afterwards got broken. They were top teeth, and his wife was quite aware that two were loose through the breakage of the roof.—In reply to the coroner, witness said he could only account for the teeth slipping by the fact that his wife had a habit of grinding her teeth during sleep, and this might have caused the teeth to slip.—Sarah Beaumont, mother of the deceased, and living in Back Union Street, said she had slept with her daughter recently. When her daughter woke on the Friday morning, she said she thought she had quinsy, but when she looked in the glass she saw that two of her teeth were missing. She felt them in her throat. She went to see the doctor the same morning. The roof of the plate bearing the teeth was broken, and witness had begged her to take them out every night.—John Dickson, M.B., surgeon, said the deceased came to him on the Friday morning, and witness tried to find the teeth with his finger, and then with an instrument, but failed, and came to the conclusion that the deceased had swallowed the teeth. Deceased went home, and was put to bed. For a day or two she seemed to get better, but complained of pain in the stomach, His assistant, Dr. Nash, saw the deceased, and found her in a very bad state, as she had vomited a large quantity of blood. Witness thought the only way to save the deceased's life was by opening the stomach, and so extracting the teeth, and Dr. Porritt kindly undertook to help him with the operation, but they found deceased in such a collapsed state that they postponed the operation twice, and before seeing her the third time she died. The cause of death was syncope, due to internal hæmorrhage, caused by the teeth rupturing some of the vessels of the stomach.—Several jurymen expressed regret that the deceased had not seen fit to have the plate of the teeth mended, because her death was entirely due to the defect in the roof.—The jury returned a verdict of "Accidental death."

INTERNATIONAL DENTAL CONGRESS.

A CONFERENCE of dentists who were in attendance at the eighteenth anniversary of the First District Society of New York was called at the Sturtevant House, to consider the feasibility and adisability of taking steps for the calling of an International Dental Congress at some future date. Thirty-five dentists were in attendance, among whom were Drs. Northrop, Dwinelle, Littig, Walker, Perry, Carr, Kingsley, and Mills, of New York City; Keech, Coyle, Winder, and Waters, of Baltimore; Hunt, of Washington; Darby, Truman, and Peirce, of Philadelphia; Brophy, and Harlan, of Chicago; Shumway, of Massachusetts; W. P. Dickinson, of Iowa; Watkins, Meeker, Brown, Levy, and others, of New Jersey; Bartholomew, of Springfield, Mass., and others whose names escaped the secretary.

The meeting was called to order, and elected Dr. W. H. Dwinelle chairman, and Dr. Geo. A. Mills secretary.

Dr. Kingsley opened the discussion by some remarks in which he considered the advisability of taking steps for organising a meeting to be called an International Dental Congress, and he offered the following resolution:

Resolved, That, in the opinion of the conference, the interests of the dental profession throughout the world will be advanced by an International Dental Congress.

A discussion then followed, in which Drs. Northrop, Truman, Brophy, Hunt, Winder, Keech, Kingsley, and the chairman took part. There was no difference of opinion as to the advisability of holding such a congress at some future time, and the years 1888, 1889, and 1891 were severally suggested and considered. The year 1890 was out of the question, because of another International Medical Congress, to be held in that year. As to the time, no decision was reached. The resolution was carried unanimously. A second resolution was offered, viz:

Resolved, That the following-named gentlemen constitute a committee of temporary organisation, whose duty it shall be to make such a plan for a permanent organisation as shall in their estimation best call out universal support.

This was also discussed and carried. The committee named consists of Drs. Dwinelle, Northrop, Walker, Kingsley, Winder, Hunt, Coyle, Brophy, Levy, Meeker, Southworth, Frank French, Truman, Peirce, and Flagg.

A third resolution was offered and carried, viz:

Resolved, That this committee be empowered to fill vacancies and enlarge its numbers at their discretion.

This conference was amicable in a large sense, yet there was a free interchange of opinion. While all did not think alike in all things, wise measures were strongly advocated, so that it should not appear that there was any disposition to place obstructions in the way of any movement that sought the best good of all.

The meeting adjourned subject to the call of the chairman.

GEO. A. MILLS, *Secretary of the Conference.*

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN, 40, Leicester Square, London, W.C.—The next meeting of the Odontological Society will be held at its rooms, 40, Leicester Square, W., on Monday, April 4th, at 8 p.m. Business: Casual Communications, by Messrs. J. Ackery, F. Henri Weiss, Boyd Wallis, C. V. Cotterell, S. J. Hutchinson, W. Harrison and J. Penfold. Paper by Mr. Newland Pedley, F.R.C.S., etc., on the Pathology of Pyorrhœa Alveolaris.

WILLOUGHBY WEISS, *Hon. Sec.*

MEDAL PRESENTED TO DR. J. ROLLO KNAPP.

A WEEK or two ago friends of Dr. J. Rollo Knapp were suddenly invited to attend at his office to witness an unexpected ceremony. He had been informed that it had been resolved by Drs. O. Salomon and E. Telle, who had been appointed a special committee for the purpose, to wait upon him at once to make presentation of a gold medal to him, on behalf of the dental profession of the State Unprepared for any formal arrangements, Dr. Knapp made the best use practicable of the little time at his command, and got together the few of his many appreciated friends he could to be present on the pleasing occasion. But a short time was allowed to elapse before Dr. Salomon, acting as spokesman, proceeded to announce his commission. His address, couched in well chosen phrase, expressed the pleasure the committee felt in having been chosen as the organ of so gratifying a duty. He laid strong stress upon the wide reputation Dr. Knapp had achieved as a representative of the dental profession of his native State, and congratulated him in the warmest terms on the great success which had crowned his personal genius and devotion.

Dr. Telle followed to the same effect, in terms of high professional regard and personal friendship. Dr. Knapp's response on accepting the medal handed to him, was worthy of the character he has earned for himself—modest, appreciative of the kindness, professional and personal, with which he had everywhere been treated.

The medal is a beautiful piece of work. It is about the size of 20 dol. gold piece, with a raised rim and ring attachments by which it can be hung as upon a watch chain. On the obverse there are artistic representations of a gold-crowned tooth, of a blow-pipe (studded with minute diamonds), of an electric mouth-lamp, and of a crown-and-bridge denture of a complete upper set of teeth. On the reverse, within an hexagonal space bearing a fine solitaire diamond at each angle, is engraved the legend: "From the Dentists of Louisiana, to J. Knapp, M A., D.D.S. His valuable inventions and discoveries, and his beautiful and artistic work in dentistry have advanced our profession and are an honour to us all. New Orleans, March, 1888."

It need not be said that Dr. Knapp did not fail to honour the occasion with generous hospitality. It was late before the little party present finally separated, with even kindlier feelings than were so cordially expressed toward the recipient of this new and marked honour.

MEDICAL SICKNESS ASSURANCE SOCIETY.

IN the report of the meeting of the Committee of the Medical Sickness, Annuity, and Life Assurance Society, published last week, there is an important omission. The names of the Trustees are given as Sir T. Spencer Wells, Mr. Ernest Hart, and Dr. Ord. To these should be added the name of Mr. J. R. Upton (14, Austin Friars), who has been a Trustee since the foundation of the Society.

TO BRONZE TIN AND TIN ALLOYS.—Tin, and tin alloys, after careful cleansing from oxide and grease, are handsomely and permanently bronzed if brushed over with a solution of one part of sulphate of copper (bluestone) and one part of sulphate of iron (copperas) in twenty parts of water. When this has dried, the surface should be brushed with a solution of one part of acetate of copper (verdigris) in acetic acid. After several applications and dryings of the last named, the surface is polished with a soft brush and bloodstone powder. The raised portions are then rubbed off with soft leather moistened with wax in turpentine, followed by a rubbing with dry leather.

APPOINTMENT.

MR. FRANK HAMPTON GOFFE, L.D.S., Lond. and Edin., Assistant Surgeon to the Birmingham Dental Hospital, has been elected to the post of Dental Tutor to the Queen's College, Birmingham.

VACANCY.

THE Dental Hospital of London, Leicester Square. The post of Dental Surgeon is vacant. Applications to be sent to the Secretary on or before April 11th.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

"Fair Play's" letter teaches us one thing, I think, viz., the evil of procrastination, and the advantages to be gained by taking every opportunity that offers. I fail to see any other lesson to be learned from "the anomalies" he gives us, nor do I see what object is to be gained by letters of that character.

In every department of life these so-called anomalies are to be found, and it would be far wiser to suggest remedies than to merely criticise—to do this latter is an easy matter; but let members, instead of seeking for anomalies, help the B.D.A. to raise the tone of our profession by joining its ranks, and working with those who have spent, and are still spending, so much valuable time for the good of our profession. "Fair Play," and those who feel with him, may rest assured that the representative Board has many times and oft considered cases like those quoted in his letter, and many hours a year are spent in consultation and at meetings, with no other object than to do what we can to purify the register, not necessarily by prosecution, but by the far better plan of encouraging those to do better who are already upon it, but conduct their practice on unprofessional lines. Law is a costly amusement, and unless the whole profession support us with enthusiasm and purse, we cannot do much in that direction.

When I look back at the profession as it was when I entered it, and then look at the gathering at the Metropole on March 10, I take heart and courage, and thank those from the bottom of my heart who have done so much for our calling.

I am, Sir, yours, etc.,

MORTON SMALE.

Hon. Sec., B.D.A.

40, Leicester Square, London, W.C.
March 26, 1887.

INTERNATIONAL MEDICAL CONGRESS, WASHINGTON, 1887.

SECTION OF DENTAL AND ORAL SURGERY,
NEW YORK,

March, 1887.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

Will you allow me to request those of your readers who will assist in the Dental and Oral Section of the International Medical Congress, to furnish me with an abstract of their papers, or the papers themselves, at once?

These papers must be in the hands of the Secretaries as soon as possible, in order that a definite programme may be arranged, and a proper amount of time apportioned for each subject.

E. A. BOGUE, Secretary.

29, East 20th Street, New York City.

"CONCERNING NITROUS OXIDE GAS."—A CORRECTION.

MR. O'NEIL writes to say that in his paper on this subject, the sentence commencing, "Another point," should read, "A thing which would be of much service, of some consequence, is a gauge and index; a tool, I believe, unsupplied, which would denote the expenditure of amount of gas used, which could be applied to the gas-bottles; one is supplied for gasometers; but the great majority of dentists prefer the gas in bottles, and use it thus."

Communications have been received from—

Mr. E. A. Bradbury, Huddersfield; Dr. Bogue, New York City; Mr. O'Neill, London; Mr. H. S. Moxon, London; Dr. Knapp, Louisiana, U.S.A.; Mr. Frank Goffe, Birmingham; Secretary National Dental Hospital; Secretary Dental Hospital of London; Secretary Victoria Dental Hospital; Mr. Morton Smale, London; Mr. Kirton, Portsmouth; Mr. G. Palmer, Cheltenham; Mr. G. H. Catching, Atlanta, U.S.A.; Messrs. Benedict & Co, Birkenhead; Dr. J. N. Farrar, New York.

BOOKS, JOURNALS, ETC., RECEIVED :—

"Thurley Tighe" (The Dental Manufacturing Company) Etudes de Pathologie Comparée (M. Magitot) Medical Annual, (Wright & Co., Bristol).

Monatsschrift des Vereins Deutscher Zahnkunstler, Report of London Dental Hospital, Report of Victoria Dental Hospital, Manchester, Dental Register, The Times Democrat (New Orleans) Ohio State Journal of Dental Science, Pharmaceutical Journal and Transactions, The Chemist and Druggist, The British Medical Journal, Journal of the British Dental Association, Oerterreichisch-Ungarische Vierteljahrsschrift für Zahnheilkunde, Boletin de Medicina (Santiago), Independent Practitioner, Dental Cosmos, Items of Interest, Southern Dental Journal, Transactions of Students' Society, London Dental Hospital, Deutsche Monatsschrift für Zahnheilkunde, L'Odontologie, American Journal of Dental Science, Dental Review, Dental Record, Glasgow Medical Journal, The Western Dental Journal, Transactions of the Odontological Society, L'Art Dentaire, Huddersfield Daily Examiner.

HOSPITAL REPORT.

Report of cases treated at the Royal Portsmouth, Portsea, and Gosport Hospital, from Jan. 1 to March 25, 1887 :—

Teeth Extracted	209
Temporary Fillings	7
Advice Cases, Scaling, etc.	48
Irregularities of the Teeth	32
Total	296

W. H. Kirton, L.D.S., R.C.S. (Ireland),
Hon. Dental Surgeon.

British Journal of Dental Science.

No. 462. LONDON, APRIL 15th, 1887. Vol. XXX.

ON THE PHYSIOLOGICAL ACTION OF NITROUS OXIDE GAS.

By Dudley W. Buxton, M.D., B.S. Lond., M.R.C.P.,
Anæsthetist in University College Hospital; the Hospital for Women, Soho Square; and the London Dental Hospital.

(*Continued from page* 301).

Among experimental researches I think we must place Sir Humphry Davy's first, not only in priority, but in excellence; for, considering the limited means at his disposal, and the imperfect knowledge of physiology which existed in his day, we must admit his research was worthy of so great a philosopher.

In one series of experiments Davy placed cats, dogs, guinea-pigs, rabbits, mice, and birds under bell-jars filled by displacement over water with nitrous oxide, and allowed them to respire the gas. In some cases he noted much excitement, followed by loss of sensation, and final death through cessation of respiration. He removed certain of his animals from beneath the bell-jar, and, placing them before a fire, watched their recovery. Curiously enough, he observed that in many instances the animals were more or less paralysed, some being hemiplegic—and some paraplegic—at least, such appears from his statements to have been their condition.

In his second research Davy compared the behaviour of animals immersed in nitrous oxide with those placed in hydrogen and others kept below water. Reasoning from these experiments, he says, "There was every reason to suppose that their (the animals') death in nitrous oxide could not depend upon the simple privation of atmospheric air; but that it was owing to some peculiar changes effected in the blood by the gas."*

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* Collected Works, vol. iii. p. 204.

But these experiments, like those of many subsequent observers, are open to the criticism that the method employed confounded asphyxial with nitrous oxide effects.

Krishaber's researches, made chiefly with rabbits, may be considered under two categories: those in which nitrous oxide with small undetermined quantities of air was employed; and secondly, when, the animal being tracheotomised, nitrous oxide only was breathed. His conclusions are that nitrous oxide narcosis differs wholly from the asphyxial state, for, as he justly points out, no true anæsthesia is brought about in asphyxia, whereas entire loss of sensation and voluntary movement come about in a minute when nitrous oxide is employed. With Krishaber's subsequent attempt to institute a comparison between nitrous oxide narcosis and the anæthestic sleep of chloroform we have in the present connection nothing to do.

Amory, of New York, has done some very valuable work upon the physiology of nitrous oxide; he investigated the gas expired during the inhalation of nitrous oxide, and further repeated Davy's experiments by placing pigeons under bell-jars filled wite nitrous oxide by forcing in that gas above and letting out the atmospheric air below. Dr. Amory's researches, both those quoted, and those which I have for the present passed by, are altogether admirable, and throw much light on the difficult question under review.

It appeared evident to me that nitrous oxide gas exerted a very considerable effect upon the nervous system, and I was anxious to undertake experiment in the direction of ascertainment whether or not it produced physical changes in the condition of the brain. One way in which it was possible to investigate this point was to examine the actual changes, if any, in the brain whilst the animal was placed under nitrous oxide.

Accordingly the experiments were made, by the kindness of Professor Victor Horsley, at the Brown Institution.

The skull of a medium-sized dog was trephined, and nitrous oxide gas given through a tracheal tube fitted with a very freely acting expiration valve. The trephine hole exposed the outer third of the sigmoid gyrus on the right side. Under normal conditions the brain was seen some measurable distance beneath the bone, pulsating quietly and synchronously with the respiration. The colour of the brain covered with pia mater was pinky red, or, more exactly, vermilion.

As soon as the animal began to breathe nitrous oxide, the respiratory rhythm being interfered with, the brain pulsations became more notable and somewhat hurried. When the gas was pushed, and the animal made to take it in freely, the brain substance was seen to swell up and gradually reach the trephine hole. The colour now began to change, and a dark, blue-red shade appeared to creep over the exposed brain, robbing the brightness of the vermilion and replacing it by a laky purple. The brain undulations were at this stage found to lessen in frequency and amplitude. The brain substance still increased in volume, and even protruded without the trephine hole, almost motionless, and of a pearly, glistening lustre of bluish hue. The vessels, examined with a strong lens, presented the well-known look of commencing stasis. At this stage the nitrous oxide was stopped, and the animal allowed to inspire air freely. Quietly and gradually, with each successive breath of air the brain receded, the undulations resuming their normal rhythm and range. With these changes came a return of the vermilion tinge which characterises the healthy brain substance. This experiment was repeated ; in some cases the animal was anæsthetised by means of a face-piece with an expiration valve, and in others a tracheal tube was introduced, but the phenomena observed were strikingly uniform. It was next determined to conduct a control experiment, first pushing the nitrous oxide to the verge of death, and subsequently producing asphyxia by deprivation of all air.

In the experiment in which nitrous oxide was given, the brain being exposed as in the last research, the gas was pushed until respiratory movements completely ceased. In a little over a minute (1 min. 10 secs.) the brain substance had become livid and swollen to above the calvarial edge ; the animal was absolutely insensitive to painful sensation : his limbs showed marked jactitations. In about 1 min. 30 secs. normal respiratory movements had ceased. Artificial respiration was promptly had resort to, and speedily the natural thoracic movements were resumed. The trachea was then occluded and the brain observed. In about a minute the brain substance assumed a deep purple dull hue, which in another half minute became very intense ; the brain then began to recede, sinking deeply from the trephine hole. In two minutes the sphincters became relaxed, and further sinking of the brain took place. In three minutes the respiration movements were very profoundly interfered with, only manifesting themselves by long-drawn gasps which were separated by long intervals. In five minutes, although all respiratory movements had ceased, the heart still beat. In six minutes access of air was allowed, but artificial respiration failed to effect recovery.

These experiments appear peculiarly instructive, firstly, as showing in a very marked way the difference between the brain condition when fed with nitrous oxide-laden blood, and when supplied with deoxidised blood containing tissue refuse; and secondly, when viewed in relation with the clinical phenomena of nitrous oxide narcosis. As I pointed out in my last communication to this Society, there is a zone of hyperæsthesia which separates the normal consciousness from the absolute loss of sensation on the one hand, and on the other which unites the stage of oblivion, or sleep, with the return to full mental activity. It is presumably at this epoch that the dreams of mental exaltation and physical joy occur, and it is then that slight external physical stimuli—*e.g.*, a flash of light, a noise, a movement—will become a thousandfold magnified and perverted in the patient's brain. The peculiar filling of the brain would seem to offer a physical counterpart for these mental conditions, and apparently rapidly so modifies the brain cells that they are capable of further reception or ideation; an initial increased exaltation gives way to a complete abeyance of function.

Experiments in the same lines were also made with regard to the action of nitrous oxide upon the spinal cord.* The animal being under the influence of chloroform and curare, the laminæ of the lower dorsal and lumbar vertebræ were removed, and the cord exposed lying in the spinal canal. The animal was then made to respire nitrous oxide, only expiring through a slit in the canula. A very marked effect soon showed itself; the cord gradually enlarged, and cerebrospinal fluid began to well out, showing the enlargement of the whole length of the cord. This experiment was repeated, and the same result was always obtained. However, as will readily occur to you, two causes might have conceivably produced this effect, namely: (1) The exclusion of oxygen, *i.e.*, the asphyxia; or (2) The presence of nitrous oxide. To test which of these possible factors was really responsible for the swelling up of the cord, the animal was deprived of air, and no nitrous oxide given. At first the cord remained unchanged—at least, no swelling took place, and no escape of cerebro-spinal fluid occurred. Soon, however, as the blood became more and more deoxygenised, the cord grew smaller, shrinking below its former level in the spinal canal. There was no doubt but that while in nitrous oxide administration the cord, like the brain, grew larger, in asphyxia it shrank. To test this effect further, the following crucial experiment was tried. The animal was subjected to asphyxia, and the cord was watched until it had perceptibly shrunk, when nitrous oxide was allowed to enter the lungs. If, as we assumed, nitrous oxide was capable of dilating the vessels of the cord when acting upon them in a normal condition, it was thought that it should produce a like effect when the cord vessels were contracted by asphyxia. The experiment confirmed this supposition, for as soon as the animal had its lungs well saturated with nitrous oxide, the cord was seen to expand, and the cerebro-spinal fluid began to escape.

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* These experiments were made at the University College Physiological Laboratory, and I am indebted to Mr. John Rose Bradford, B.Sc., for their execution, and to Professor Schäfer for the use of the Laboratory.

We may now briefly consider the conclusions these experiments upon the brain and spinal cord appear to justify. In brain and cord alike, we meet with dilatation of the vessels, with, of course, an increased blood supply to the nerve-centres. Such a condition would indicate a condition favourable to the dissociation of nervous energy, but this would soon be followed by a condition of over-distension and interference with due regularity of the cerebral and the cerebellar circulation subversive of ideation and the performance of adjusted muscular action. The interference to the cord circulation must also interfere with the due conduction along its paths, as well as with the correlation between its parts and the higher brain centres. At present we may not be in a position to theorise beyond the broad general statements given above, but I think we may justly recognise in the interference with the circulation of the brain and spinal cord, produced by the inhalation of nitrous oxide, a phenomenon which accounts for not only the every-day experience we meet with in giving the gas to human beings, but also to those aberrant cases which occur more rarely, and evince marked nervous exhaustion or irregular outbursts of nervous energy. But of these states I will speak again later on.

The development of nervous symptoms certainly varies largely with the initial state of the nerve protoplasm, for while in some persons nitrous oxide induces marked nerve disturbance, in others it brings about none whatever. I may here be allowed to introduce a brief note upon ankle clonus as revealed under nitrous oxide. This phenomenon is, in a certain percentage of cases, produced when the patient is deeply under the gas.

Among reflexes it is usual to consider two classes, skin or superficial reflexes, of which a familiar example is found in the conjunctival reflex, and deep, of which we have examples in ankle clonus and the patellar jerk and front tap reaction. In health, and under normal functional conditions, the superficial and the patellar reflexes are present; certain pathological conditions lessen or exaggerate these reflexes, and cause the development of ankle clonus. I think, however, we may take it that the presence of ankle clonus points always to disease or functional derangement of the spinal cord. Now nitrous oxide produces very marked derangement of the reflexes. In October, 1883, Professor Horsley* drew attention to the persistence of the patellar phenomenon under profound anæsthesia, and long after the disappearance of the superficial reflexes. Clonus I have found to be developed in a number of cases, although it is not a constant phenomenon of nitrous oxide narcosis; hence this gas not only abrogates the function of the brain centres, but also produces marked disturbance in the cord, while it blunts or obliterates peripheral sense. What is the exact nature of this derangement of the cord functions we cannot, I think, venture at present to offer an opinion; we can only study it by means of the phenomena it reveals. These also are various, differing, it would appear, according to the stability of the nervous centres of the individual subjected to observation. Nor is this surprising when we remember that the effects are very transitory, and must be largely influenced by collateral circumstances. The more constant cord phenomena are—rigidity of the muscles, which passes into complete flaccidity; jactitations which appear rhythmic and general; loss of superficial reflexes; persistence of knee jerk. Among the occasional phenomena we may reckon—ankle clonus; opisthotonus and emprosthotonus; paralysis of the bladder and defæcation centres, and involuntary and unconscious passage of urine and fæces; probably, excitation of the sexual centres, and abolition of the normal checks imposed upon the production of orgasm. Further, we must reckon the secondary results apparently due to a more lasting cord effect, as seen in paresis, or even paraplegia, following nitrous oxide inhalation. Many of these phenomena are confessedly rare, and are perhaps only elicited in nervous systems predisposed to take on the condition, whatever it may be, which nitrous oxide induces. In some respects nitrous oxide would appear to hold comparison with strychnine. The rigidity, with the occasional liberation of irregular and disorderly explosions of nerve energy, occur, although with different degrees of persistence, alike with one and the other drug. This would perhaps give a clue, and suggest that under nitrous oxide the higher ideomotor centres lose control, the resistances throughout the cord are lessened, and the cells, deprived of the normal restraints imposed by habitual and associated action, tend to irregular explosive outbursts. It seems at least probable that under nitrous oxide not only do we meet with a stage of preliminary exaltation of function, misdirected indeed, and unconstrained by judgment, in the brain centres, exemplified by the stage of hyperæsthesia spoken of above; but that in the lower cord centres we recognise a similar initial heightening of activity, also irregular and disorderly, followed by cessation of their functionation. Indeed, I venture to think the same sequenc of events happens in the vital centres, and that this explains much of what follows in the remarks made upon blood pressure, cardiac, and respiratory rhythm. But although we may not as yet go far enough to dogmatise upon what is the nature of this action upon the cerebro-spinal axis, yet it seems consonant with our facts to regard it as a sedative, which, while provoking an initial exaltation of function, eventually plunges the tissues into a sleep, or state like the long dose of hibernation. Certain it is in some cases one meets with a prolongation of nitrous oxide narcosis, unaccompanied by the wild convulsions of asphyxia, when the breathing absolutely stops, while the heart still beats on. In this state presumably the cord centres have gradually yielded, and, the medulla reached, the respiratory centre has also peacefully ceased from work, and the patient is entranced alike in his mental and vegetative functions. In these cases artificial respiration, conducted for one or two admissions of air, restores the patient to animation, and all goes well. No danger is, in fact, incurred, unless the anæsthetist is either incompetent or negligent of his solemn charge. It seems hardly worth while to do more than to beg you to compare mentally these phenomena with those afforded when asphyxia terminates life. To contrast what has just been described with the mental activity persisting almost to the last gasp, the purposeful struggles, the wild, chaotic respiratory efforts, the frantic writhings of the voluntary muscles, and at length the general massive convulsions, passing into a false quiet, marked by an occasional gathering together of the failing nervous energy to effect a spasmodic explosion of muscular force.

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* "Brain," vol. vi., p. 369, *et seq.*

(*To be concluded.*)

THE FUNCTIONS OF THE TEETH.*

By Mr. A. W. Frost.

Mr. President and Gentlemen,

In considering so wide a subject as the functions of the teeth, the many peculiarities of functional development which continually crop up in the range of dental anatomy and physiology would form an exceedingly interesting topic, and one that from its very nature would attract attention. But to do them all justice would require a larger experience and a broader knowledge than I have at my command, and hence, in devoting a few minutes to a part of the subject only, I will endeavour to give an intelligible account of the human teeth and their uses, omitting all the functions to which in comparative anatomy the teeth have come to be subservient.

It is a law in nature that organs be developed in a manner and to an extent as shall best be adapted to the performance of their several functions, and the teeth conform to this law equally with other members, whose tissues are more susceptible of change. Whether the teeth were evolved in subservience to their functions, or whether organs and functions were designed together is a matter that I do not intend to touch upon to-night; I only wish to consider the teeth in relation with their functions, and to point out how they are adapted to their purpose. We must first of all consider what these functions are: they are essentially two, the mastication, and its inseparable ally, the insalivation of food; to which may be added the incidental part played in the articulation of language.

With regard to mastication, we take food to support the life and activity of our bodies, which we believe is ultimately affected by a mysterious chemico-vital action, of which we know very little, save that carbonic acid and a few complex organic bodies are set free, that is to say, our food has to go through a series of chemical changes ending in the formation of carbonic acid gas and water principally. Now the force of chemical affinity cannot act at a distance; molecules must be in actual contact, and therefore all chemical actions are facilitated by the substances acted upon being in a fine state of division. And looking upon the digestive processes as chemical in their nature, it is only natural to suppose that digestion is facilitated by the previous comminution of the food. It is true that digestion can in some cases be performed very well without mastication. Carnivorous animals do very little in the way of mastication, just enough to enable them to swallow their food ; birds too have no masticatory apparatus except an apology for something of the kind in the gizzard, but in all these cases the strength of the digestive juices bears a proportion to the development of the masticatory mechanism, and an eagle can digest a solid bone with time and patience, so powerful are the secretions of its alimentary canal. But ours are not comparable with these, and they insist on the thorough comminution of the food before deglutition, that they may properly perform their work. With the progress of civilisation, a great deal of the work of the teeth is performed beforehand in the processes of cooking, &c., but insalivation of the food, in which the teeth with the hard palate play a passive part, is a function of almost equal importance with the one I have been speaking of.

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* A paper read before the Students' Society, London Dental Hospital.

It is a rule of the body that acid secretions are excited by alkalies, and alkaline by acids. The gastric juice is acid, and the saliva faintly alkaline, hence it is beneficial that the food be thoroughly incorporated with saliva, since by its alkaline reaction it stimulates the walls of the stomach to pour out their secretion. The chemical action of the saliva on starchy food is exceedingly slight, and may be almost entirely disregarded ; but its mechanical use is important, by moistening dry food it assists in forming it into a bolus ready for swallowing, and deglutition cannot be performed till the food is thoroughly moistened. A good example may easily be obtained by challenging a person to eat an Abernethy biscuit in five minutes ; so long as he has sufficient saliva to lubricate the dry particles, and form them into a consistent mass, he can swallow, but as the saliva becomes deficient, the crushed fragments of the biscuit hang about the tongue and fauces, and the last mouthful cannot be swallowed within the time. The teeth are by no means the sole factors in this process of insalivation, but they play a very important part, and one that we may not overlook in considering their functions.

But before passing on to the organs themselves, there are some facts I would like to mention concerning the dental pulp. It has been suggested by Mr. Coleman that the odontoblast cells which are in direct continuity with the dentinal fibrils have a sensory as well as a formative function, and that they are analogous with the various nerve endings found in other parts of the body. That something of this kind does exist I think we must all admit, for besides being able to appreciate the varying consistency of the food we masticate, so as to be able to tell whether a crust or a cinder be between our teeth, which may be very intelligibly explained by pressure on the periosteum (as instanced by the sticky sensation in closing the teeth in periostitis), we, or at least some of us, have teeth exceedingly sensitive, not only to hot and cold, but also to sweet and acid substances. A peculiarity about this is that we cannot distinguish between the sensations (the sensation is that of the stimulation not of a nerve-ending but a nerve itself), they are all characterised by what is called toothache—a violent pain in the tooth, which in morbid conditions is produced by inflammation and the consequent expansion of the vessels of the pulp which press upon the nerves, or it may be on the nerve endings, if these views on the sensory functions of the odontoblasts be correct. And it has been suggested that in the cases above mentioned pain is also due to compression of the nerves, but brought about in a different way, not by expansion of the pulp, but by contraction of the hard tissues. In favour of this view has been brought forward the fact that on the surface of old teeth may be seen cracks and fissures with which I am sure we are all familiar. But I would here point out that pain is experienced in precisely the same way in pulps that have lost their coverings of dentine and enamel, and therefore cannot be contracted upon. It is a matter of common experience that sugar or vinegar, or any sweet or acid substance, will set an exposed pulp off aching, and I do not at all hold with the view above. That these sensations must be produced by molecular changes comparable to those of heat and cold I cannot well doubt, but that the teeth alter in volume sufficiently to press upon the nerves despite the above cited cracks in the enamel, I do not regard as probable. I think it to be the same cause that produces the contraction (if any contraction there be) that produces the pain, that is, a molecular change. In speaking of the functions of the pulp, I may here refer to the condition we know as the "*teeth on edge*," often produced by eating rough fruit or by nausea. Myself, I am almost inclined to refer the sensation to a sympathy with the lips and cheeks, since, in common with the teeth, they are supplied by the same sensory nerve, and an astringent sensation in the one may affect both. At the same time, I must admit that the teeth may apparently be "set on edge," as the phrase goes, by the teeth in the first instance, by biting into a sour apple without touching the lips, and then it would seem to be a definite sensation consequent on a definite stimulus, as opposed to the indefinite sensation produced by hot, cold, sweet, or acid substances. A peculiarity often is, that one tooth out of the whole set is more sensitive than the others, possibly it is more deeply fissured than the rest. But some people have all their teeth unusually sensitive, and I know of a case in which a man, with as good a set of teeth as could be desired, cannot eat an apple without having severe pain in all of them. Bearing on this subject too, I may mention that indescribable sensation consequent on hearing any shrill sound (such as we, as schoolboys, used to make by drawing a gritty piece of slate pencil down a slate), which makes the whole body shiver, and then, in passing off, seems to linger in the tips of the fingers and in the teeth, producing a feeling that I have only once heard described, in the quaint language of a child, who said that "it made her teeth itch." But why should the tips of the fingers and the teeth be associated? Is it that both are full of nerve endings—in the one case tactile corpuscles, and in the other odontoblasts? Do these facts point to a function of the pulp other than a nutritive, by which it can appreciate changes that take place in the mouth giving rise to the sensation of pain or roughness? For my own part, I am disinclined to ascribe any other attributes to the odontoblasts than those that they already possess; the more so, as the endings of the dental nerves are as yet undetermined.

We will next pass on to the adaptation of the teeth to their functions. It is said that the normal arrangement of the teeth of the upper and lower jaws is, that the teeth of the upper are ranged along a curve of larger dimensions than the lower, the incisors passing in front of the corresponding lower teeth, and the external cusps of the bicuspids and molars closing outside those of the lower teeth, whose external cusps close into the furrows between the cusps of the uppers. Such is the disposition given as normal in the text books, but in civilised man we can lay down no hard and fast line for his dental arrangements, and those of us who have had much experience in articulating models in the work-room, know that the molars are not uncommonly exactly opposite, or perhaps more often the lowers outside the uppers, as they always have to lean inwards to articulate with their upper antagonists. But whether they are arranged exactly opposite, or overlapping, mastication is performed in much the same way, viz., by bringing the cusps of the lower molars opposite those of the upper, whence, by the lateral movements of the jaw, the external cusps of the lower pass up the inclined surfaces of the external, and down those of the internal cusps of the upper teeth, crushing in their course any interposed substance. And not only do they crush the food but at the same time they mix it intimately with the saliva, which is copiously poured out into the mouth, partly by a reflex action, partly due to the presence of food, partly to the relish of the food, and partly, perhaps, to the mere closure of the jaws, with the muscles of which the glands have learned to work synchronously. Thus, with the help of the tongue and cheeks, the food is masticated and insalivated; and when this is done, the teeth have played their part in the alimentative function.

Let us now see how the teeth are adapted to best perform their work. The principal dental tissues are five—enamel, dentine, cementum, pulp, and periosteum. The teeth are called upon to do hard work for a lifetime; we would, therefore, naturally expect that they should be made of as hard and enduring a tissue as possible, and such we find in enamel. It is the hardest organic tissue known, and although in some animals which put their teeth to severe use, it quickly wears down, and has to be replaced by a compensatory growth at the root, yet for the purposes of human digestion, the enamel is sufficiently hard to be in civilised countries, rarely altogether disappearing from the crowns of the molars after a lifetime's wear. But, of course, the length of time a tooth will last is proportionate to the roughness of the food and the intrinsic qualities of the tooth. The Indians of North America, who are constantly eating fish, their staple article of diet, and with the fish a good deal of admixed sand, and the earth-eating aborigines of the Amazonian *selvas*, wear their teeth down to the gums long before their term of life has run into its decline. Lower animals, that use their teeth to such an extent on gritty food, either, like the horse, develop a great depth of tooth substance, which is raised in its socket as the tooth wears down, or, like the rodents, are possessed of persistent pulps, which are ever developing fresh tissue below to compensate for the attrition above. We may, therefore, pretty well conclude that such races have departed from the habits of their progenitors, and as yet the organs have not had time to adapt themselves to their altered functions. But such are exceptions; as a rule, the teeth will be found fully capable of performing their functions to the end of life, and men lose their teeth as they grow old, not from any inherent defect in the organs themselves which affects their durability, but from senile changes in the parts that support them.

But the dental tissues are not only called upon to resist friction; they have also to sustain shocks, and the microscope shows us how eminently the structural arrangement of the tooth is adapted to this. The course of the enamel prisms, from the dentine to the surface, is an elongated spiral; the same is true of the dentinal tubes, and it will be readily perceived how such a form is adapted to resist shocks without breaking or splitting. Moreover, the recent researches of Bödecker and Heitzmann have shown that a structure (presumably intercellular) is present between the prisms; and this, however small, would add to the toughness of the tissue. Thus, by a peculiar structural arrangement, a capability of resisting mechanical force is given to the enamel, which a simple fibrous structure would wholly fail to supply. The dentine upon which the enamel rests is one of the most perfectly elastic substances known, and, although the function of the dentine may be principally nutritive, yet it must considerably assist in preventing teeth from fissure and exposure of the pulp, which would be more likely to occur were the teeth composed entirely of the more brittle enamel. But, besides the danger of the teeth themselves being broken by the force of mastication, there is to be considered the unpleasantness of the shock to the adjacent parts of the face and cranium. The upper jaw is well buttressed on every side by the nasal, malar, and palatine processes, and by the pterygoid plates of the sphenoid; but in connection with the teeth themselves, we must take into consideration the alveolo-dental periosteum, or, according to the name more lately proposed for it, the dental ligament. Of course, the bare fact of a pad of fibrous tissue placed in the socket would, by its simple inertia, reduce the shock considerably, but microscopical examination shows us more. The fibres do not go straight from the bone to the cementum, but pursue an oblique direction, at the same time having a wavy course; they meet the cementum at a lower level than that at which they started from the bone, and thus the tooth is, so to speak, slung in its socket by the periosteum, and the whole depth of the alveolar process shares any strain on the tooth.

We will next discuss the functions of the several individual teeth, beginning with the incisors. As their name expresses, they are essentially adapted for cutting by their chisel-shaped working surface, bevelled off from the inside. And we may note how Nature has employed the best means for attaining her end. We all know the difference between a pair of cutting pliers and a pair of shears, and are well aware how great an advantage the shears work at as compared with the pliers. Now, in all teeth designed for cutting, whether they be the sectorial teeth of carnivora, or the incisors of rodentia, or the front teeth of man, the lowers work in a different plane from the uppers, after the manner of a pair of scissors. When incisors meet edge to edge, we may know that they are not designed for cutting, but rather for holding, as in the case of the incisors of the horse and other animals, which in grazing do not bite the grass off, but grasping it between their front teeth, break it off. Here we must allude to the diminutive, and sometimes absent lateral incisors that we so often meet with. We may take it as granted that organs do not diminish in size and frequency by chance or by any freak of Nature; they must have either a pathological or a functional cause for their changes, and in this case the cause is functional. Of all our teeth we may say that the progress of civilisation has diminished their functions, but most of all the incisors. If our food be such as requires little or no mastication, yet it must be insalivated, and the molars find a use; but almost the sole use for our incisors is articulation, and under the circumstances we cannot feel surprised that they should fall under the ban of Nature. Had our incisors a more definite function—that is to say, did we use our knife and fork less, and our teeth more—it is probable that our work, in the way of regulating teeth, would be proportionately reduced.

(*To be concluded.*)

NOTES ON DENTAL HYGIENE.

By George Robinson, Oamarn, Otago, New Zealand.

(*Continued from page* 636.)

By way of introduction to the concluding portion of my notes on Dental Hygiene, allow me to say that it is with the idea and belief that dental practitioners are advancing and not retrograding, that I venture to write. Were it not so, I might remain silent ; some of my remarks may not coincide with popular ideas and current opinions ; yet, I am led to hope that careful and unprejudiced investigation will gain some adherents to the tenets which I hold ; the evidence on which, I believe, my statements and propositions rest are constructed from varied materials, abstract and concrete, as they arise in my mind and appear to support my views ; and, as I take it to be an admitted fact that the immense benefits which have been hitherto derived from improved sanitation are amply established, those and other reasons must plead my excuse if I appear somewhat enthusiastic in urging the claims of sanitary reforms, and greater attention to some minor details—more especially in connection with the practice of dental art and science. Any one who has read the life of "Louis Pasteur" will be more prepared, perhaps, to admit the necessity of a consideration of those malarious influences which are no longer mysterious, save to the most ignorant, and are now known to cause many diseases which proper cleanliness will prevent ; the neglect of *minor ailments* often lead to *major ones.* Many are, no doubt, too busy to give much attention to hygiene, but having observed for a number of years men drop out of the ranks just as they become experts or soon after, and, in many instances, a little more healthful recreation in the pure open air daily would have prolonged valuable lives many years. Slaving away at an arduous profession will not fail to produce physical infirmities in some form by the invasions of unobserved causes stealthily causing irreparable mischief, which only the strongest constitutions can resist for any great length of time.

According to some writers in the United States of America, the life of a dentist who is busy at the chair is quite brief ; yet, bad as overwork may be, is not worry worse? Hygiene should, I think, receive more attention than it does. One of the most important, yet, perhaps, most neglected, aids to the analysis and detection of sanitary surroundings is the high cultivation of the olfactory sense, which can be improved to a degree of acuteness far beyond that which is commonly possessed. Among the best means that can be employed to secure this faculty, I believe to be attention to general hygiene, the use of *pure aseptic* food, more attention to, and observance of, the various odours peculiar to chemical substances, gases, compounds, etc., etc., including fermentation products.

The use of pungent narcotics, as tobacco ; strong perfumes, as musk, *patchouli* and similar perverting odours, when much used are antagonistic to the attainment of a high degree of olfactory sensibility.

The microscope is a most valuable aid, which cannot well be dispensed with in the discovery of malific germs, not that all germs are generators of disease, for some are, undoubtedly, consistent with perfect health ; but the septicity which results from neglect of some of the laws of sanitation cannot fail to be ultimately productive of disease in some form, and to curtail the legitimate length of life.

It is my firm conviction that very *few persons* live nearly *as happily, healthfully*, or long as they might do. True, we are told by the poet—

> To desire not to live long, but well,
> How long we live, not years, but actions, tell.

So far, so good ; yet to live healthy lives is more consistent with happiness, and calculated to prolong our existence and extend our usefulness.

It appears to me, that everything which is calculated to produce a gross or impure condition of body, is antagonistic to true enjoyment of life and health; therefore, general hygiene, as treated of in the works of Drs. Wilson and Ed. A. Parkes, &c., should, I think, receive some attention by every dental practitioner. One of the most important branches of hygiene is the thorough ventilation, not only of all surgeries and laboratories, but of every part of *every dwelling ;* a want of which will negative all efforts in the direction of health and purity. A Tobin's ventilator, &c., is very excellent, I believe, for carrying off such contaminated air as floats near it, *when* there is a *proper intake* near the basement to admit fresh air which is to cause a current. This is, I have generally observed, by opening a door or window; but, in order to *thoroughly flush* a room, it is necessary to provide some special contrivance, which shall act constantly, yet can be shut off when required, and so arranged as to take in air from as pure a source as possible, and on the *sunny side* of the house *in cold weather*, or the opposite in warm weather, when required. This is obviously more practicable in some countries than in others. The difficulty of controlling currents of cold air—which, in Great Britain at least, are not desirable—may, I believe, be met by attention to the foregoing points, and the admission of air through some intercepting medium, which will prevent too much draught in cold or windy weather. Such a medium I have devised. A machine could easily be constructed to produce the desired perforations, which, hitherto, I have only been able to produce imperfectly, yet have had a strip of zinc so perforated in constant use in my surgery, and also a similar one in my laboratory, with decided advantage, for two years. As I can have the upper part of the window open, to the extent of six or eight inches, without feeling the draught on my head—the unpleasantness of which leads to my contrivance, which differs from ordinary perforated zinc, by the perforations being in a slanting direction, and the little flaps cause the air to be deflected in any direction you require, in the most simple manner and inexpensive; and in warm weather, when I wish to admit more air, I have only to pull the sash down lower, &c.

While the complete in-breathing of *pure air* is of the utmost importance to man, yet it is very rarely accomplished; and in the best dwellings, even of the highest nobility, ventilation is generally imperfect, ALMOST universally so. To the student of practical hygiene it is a matter of surprise that so little improvement has been effected in this direction. To the mass of the people all sanitary progress is exceedingly slow. It is equally important, both for the health of the practitioner, as well as his clients' comfort, that his clothing and all his surroundings be scrupulously clean. No doubt, in the majority of cases, this is attended to; but there are many, I fear, where there is ample room for improvement. Finally, are there not physical reasons why some people do not perceive, or are unconscious of, the existence of malaria? How many fatal cases we have read of, where people have been crowded more or less; yet, had they been aware of their danger, would they not have avoided it? These instances indicate that we may breathe poison and yet not be conscious of it—nay, utterly oblivious, when accustomed to small doses; for it is well known our bodies are very accommodating, and health is easily *simulated* until a certain boundary line is passed, which line varies with the peculiarities of the individual's constitution, and some perhaps *slight* ailment precedes more serious disease, which is not always traceable to the *true cause.* And these remarks apply to mental as well as physical hygiene. I think we should aim at the highest mental and physical health which is attainable. The old state of indifference, which very strong people may regard *with apparent impunity*, unsanitary conditions will not be tolerated much longer.

In order to secure anything like good health, every person requires a certain amount of daily exercise in the open air; but if we are too much fatigued by overwork, we cannot enjoy life as every honest man is justly entitled to. It is perfectly absurd for any man to be a mere working machine, a drudge, whose chief relaxation, in many instances, consists in drawing poisonous fumes into his mouth, and then puffing them out again immediately, and perhaps flattering himself that he has soothed his jaded nerves by means of a harmless agent, which may not be quite so innocent as it seems, and its benefits very questionable indeed, and is not consistent with what I take to be hygienic conditions when employed daily to the extent that is customary. And equally inconsistent with *true* hygiene is the daily use of alcoholic stimulants, which are, perhaps, quite as deceptive as foul air and tobacco; though to a *jaded* man there is a strong temptation to take a little of SOMETHING, you know. And, indeed, I do not condemn a man, but pity the conditions which cause him to require such *flimsy crutches.*

For various reasons I must now conclude my present notes, which, if they do no present good, may possibly help on a little towards the end in view, viz., *mens sana in corpore sano.*

FACIAL PARALYSIS FROM COCAINE INJECTIONS.—Several cases are reported by Mr. Mewborn, of Memphis, in which complete facial paralysis followed the injection of cocaine into the gum, in order to avoid the pain of extraction. The paralysis persisted for several days, giving rise to great alarm alike in dentist and patient. We do not seem yet to have got to the bottom of the pleasant vagaries of cocaine.

British Journal of Dental Science.

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LECTURES ON DENTISTRY FOR POPULAR AUDIENCES.

ALL dentists of long experience have noted again and again how bitterly people regret the heedlessness of themselves or their parents which has resulted for themselves in a ruined set of teeth, an enfeebled digestion, and all the chain of attendant evils which such a state of things necessarily brings about. "I cannot," such a one will say, "altogether blame myself for my neglect of my teeth; when I was a child I knew no better; indeed, I never realised how far the well-being of my poor teeth depended upon my care." And small wonder. Who, outside the profession, can appreciate the slight initial indications of decay? To most persons, save those who have been brought frequently into intercourse with their dentists, ignorance supreme about the physiology of dentition is the rule; they also know nothing of the measures necessary to induce healthy growth of the teeth; and further, are equally unable to direct reasonable endeavours towards maintaining their organs of mastication free from disease. As a rule, persons wait for the advent of toothache to tell them something is wrong with their teeth, and when this occurs, if children, their idea is to get the tooth pulled out—a plan too often acquiesced in by their badly-informed parents. Any measure, then, which gives hope that some instruction will be given in untechnical terms to untechnical minds in the many matters concerned with growth, health and caretaking of the teeth should be welcomed with pleasure alike by the dental profession and the public. We mentioned very briefly in our last issue that Mr. Henry Moxon, as dental surgeon in charge of the Anerley Schools, had undertaken a departure in this direction. Handling his subject in a plain, common-sense manner, he tells to the school children a straight forward, unvarnished tale about their teeth, and attempts to inculcate habits of cleanliness and hygiene which, if practised, must stand the members of his young audience in good stead throughout life. As each child will, in time, occupy the position of the centre of some household, the good teaching received will, in coming years, be capable of bearing a rich harvest. It is easy to impress upon the child's mind habits and thoughts which cling throughout life, and influence the acts of adult life. In England we care so little about school hygiene that it is a rare matter to find large schools to which any special dentist is attached, the poor children being given over to the ministration of the "doctor." The result of this arrangement is better imagined than described. In schools also where physiology is taught, which is seldom the rule, the little pupils are duly instructed concerning the development of teeth, and are posted up with the latest theories about the enamel organ and dentine, but no mention is made of how important is the preservation of the teeth for the due carrying out of the vital processes. It would be well if every large school, whether founded for the children of the well-to-do or for those less carefully nurtured was placed in the hands of a competent dentist, who should not only treat his little patients' aching members, but who should be responsible for systematic instruction imparted to the pupils concerning the uses, the preservation, reparation and vital value of their teeth. Such teaching could be made very interesting and effective, and might be so given as to appeal directly to the children themselves, inducing them to emulate each other in a useful rivalry in cleanliness and general attention to their organs of mastication. We have insisted above upon the enormous value which must follow such instruction, and we have little doubt that before very long we shall see Mr. Moxon's very excellent example largely followed.

At present, but few dentists have the chance of giving such lectures, but ere long the appointment of a dental surgeon to every workhouse, school, prison and reformatory, must be an accomplished fact, andthen a wider scope will be opened to the profession in this particular field of usefulness. One word of caution must, however, be uttered. It is above all things important that lectures should not be given for the sake of mere talking. Whatever is done in this direction will need to be carried through with tact and knowledge, singleness of purpose, and a sincere desire to benefit the audience. If any of these motives are lacking, by all means let popular lectures be let alone. It is true that such things may be most useful, but it is as irrefragable that they may be rendered baneful to the last degree.

IMPORTANT CHANGE IN THE LAW AFFECTING REGISTRATION.—Mr. Morton Smale, in our correspondence column, draws attention to a very important matter, which nearly touches dentists and dental students. The gist of the matter is that, after June next, no one will be permitted to enter his name upon the MEDICAL REGISTER unless he has obtained the double qualification of the conjoint Royal Colleges of Surgeons and Physicians of England. We hasten to put the information before our readers, and shall have more to say at a subsequent date.

M. PASTEUR is reported to be dangerously indisposed. The anti-vivisection *claque* are rejoicing that the lion is down.

MR. SAVORY, President of the Royal College of Surgeons of England, has recently received a memorial from anti-vivisectionists, condemnatory of the scheme now on foot for the establishment of a laboratory for practical pathology. The Council of the College disclaims any responsibility in the action of the President of the College, so it must be confessed that Mr. Savory's position at present is one of difficulty, especially as it is matter of history that he was unable to see his way to receiving a deputation stating the other side of the question, when he was asked to do so a few weeks back.

IN England, dentists are peculiarly out at elbows with all facilities for pathological research connected with dental disease. They have no physiological laboratory of their own, and are obliged to get their work done as best they may by going to the general hospitals. If L.D.S.'s had a voice in the management of the College of Surgeons, England, as they should have, they might bring their vote to bear and get a corner set apart for their own research work.

THE ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.—The following are the office-bearers for the year 1887-8 :—President, W. H. Williams, MB., C.M., L.D.S., D.D.S.; Vice-Presidents, Malcolm Macgregor, L.D.S., J. Moore Lipscomb, L.D.S.; Hon. Treasurer, G. W. Watson, L.D.S.; Curator and Librarian, J. Stewart Durward, L.D.S.; Hon. Secretary, John S. Amoore, L.D.S.; Councillors, John Mackintosh, Esq.; W. Bowman Macleod, L.D.S.; Walter Campbell, L.D.S.; Rees Price, L.D.S.

COCAINE AND ITS ANTIDOTES.—Cocaine appears to cause heart failure and the unpleasant effects by inducing the blood to leave the brain. To obviate this, it has been proposed to give nitrite of amyl, which produces an opposite effect by causing the blood vessels of the brain to dilate: cocaine also in some persons produces convulsions, and so kills. It is said that bromide of potassium, with the external use of cold, will do much to prevent these convulsions. On the whole, the use of cocaine seems not altogether free from the possibility of inducing unpleasant symptoms.

FATAL POISONING BY COCAINE.—*Apropos*, the *Western Dental Journal* quotes the following instructive case :—Dr. W. H. Long recently reported to the Detroit Academy of Medicine a fatal case of poisoning by application of cocaine to the larynx. The patient, a man, had been treated with nitrate of silver applications and spray of Lugol's solution for inflammation of the larynx. Spasms of the glottis subsequently occurring, relief was obtained by the application of a four-per-cent. cocaine solution. Seen two hours subsequently he was resting quietly ; an hour and a half later he was unconscious. His breathing was somewhat laboured; respiration 20, pulse 90, and moderately full. Pupils slightly contracted. The lungs were well filled with air with each inspiration, and the general condition was one of profound anæsthesia. The first thought was of asphyxia ; but as that was excluded, the doctor slowly arrived at the conclusion that he had to deal with cocaine poisoning. Frequently repeated hypodermic injections of whiskey restored the patient to consciousness, and the next morning he had fully recovered. The former treatment was resumed with temporary good effect, followed by another relapse. Cocaine was again resorted to, with precautions before neglected, so that swallowing the solution or undue absorption was supposed to be prevented, and the strength of the preparation used was only two per cent. Anæsthesia again followed ; injections of whiskey revived the patient, but he suddenly ceased to breathe, and all efforts at resuscitation proved unavailing.

ANOTHER CASE OF COCAINE POISONING.—A physician of Springfield, Pa.—Dr. C. N. Moore—resorted to the regular use of cocaine a year ago for allaying a troublesome pain. For six months the effect was satisfactory. Suddenly he experienced singular hallucinations. These recurred and became increasingly dreadful. He discontinued the use of the drug, but his mental suffering continued, and he became maniacal. At latest accounts he was lying at the point of death. His physicians are divided in opinion as to the cause of his madness, but most of them trace it to the habitual use of this deadly drug. This case is quoted from *Items of Interest.*

TRICHLORPHENOL AS AN ANTISEPTIC.—This substance, which owes its introduction as an antiseptic to Russian surgery has recently obtained quite a reputation as a destroyer of infective germs. Trichlorphenol is extemporaneously prepared by mixing one part of a four per cent. solution of carbolic acid with five parts of a saturated solution of chlorinated lime; the filtrate is said to be twenty-five times more powerful than carbolic acid. It is certainly a good combination, and, doubtless, will prove useful. It has not at present received notice at the hands of dentists, but since iodoform has been shown to be so unsafe an antiseptic, it seems time that we should carefully test the efficiency of the various new substances recently introduced as antiseptics with a view to supplying our need of a reliable and not unpleasant germicide for use in the mouth.

THE TEETH IN RICKETS.—Horner's rachitic teeth are thus described: "They are, as a rule, thicker and coarser than the normal; the nearly formed incisor appears somewhat cubical and shapeless, though the shape can, in many cases, closely approximate the normal. The enamel, instead of gradually thinning away on the neck of the tooth, terminates abruptly in a swollen ridge. The delicate horizontal furrows to which the enamel owes its satin-like appearance become so enlarged as to even be visible to the naked eye; and sometimes, especially toward the cutting edge, a horizontal row of round holes marks the position of one of these excavated grooves. The body of the tooth terminates in a convex border at the cutting edge. The junction of the labial and lingual surfaces of the enamel runs as an irregular, zig-zag line over the surface of the tooth. Sometimes the enamel is quite absent in grooves, the floor being formed by the discoloured dentine."

PALLADIUM AMALGAM.—The use of palladium for filling teeth is strongly recommended by Mr. W. A. Hunt, in the *Journal of the British Dental Association*. The amalgam made with this metal is, he says, the most durable known, bearing wear and tear perfectly, and not being acted on by saliva. The only disadvantages attending its use are, that while the filling is exposed to view it shows of a dark purplish black colour, and that its manipulation requires special care. The grey unoxidised palladium powder should alone be used. He remarks that, although apparently more costly than gold

(140s. to 147s. per ounce), it is much lighter, so that one ounce of palladium is nearly equal in bulk to two ounces of gold. By the few who recognise the value of this metal for dental purposes it seems to be extensively used, since it is said that a noted dentist has paid from two to three hundred pounds for palladium used in his private practice.

Valuelessness of Lime Phosphate as a Bone and Tissue Former.—M. Logeais quotes the experiments of Lehmann, Heiden, and Veiske, who claim to have demonstrated that the phosphates of lime added to the food are not absorbed, but are excreted in their entirety in the dejections. Dujardin-Beaumetz is quoted as saying that this salt has no action whatever, while neither the phosphates of lime nor phosphoric acid is absorbed. To this may be added the statement of Nothnagel and Rossbach: "Never, as far as we know, has a case of rickets been cured by the administration of lime." "Everywhere there is a lack of trustworthy and extensive observations," as to its utility. All the forms of lime salts used in practice are, according to M. Logeas, precipitated and made insoluble as soon as they pass the stomach. They are, therefore, taken up, if at all, in the stomach alone, and the amount absorbed here is very small. The practical conclusion that lime salts of all kinds are therapeutically useless, is one which deserves the attention of the many physicians who are constantly prescribing them in various conditions. Very many dentists make it a routine practice to advise their patients to take lime salts, especially in pregnancy; it is important they should note that such a measure is probably absolutely without use.

Calendula as a Styptic, etc.—Marigold is a very valuable plant to dentists. A tincture (1 in 10) may be advantageously employed as a styptic to bleeding, lacerated, or granulating gums. It checks ulceration, and, being far from nauseous to the taste, may be employed as a mouth wash, one part of the tincture to seven parts of water. If needful, a few drops of carbolic acid or some boracic acid may be added to the mouth wash. Dilute solutions are valuable in treating foul breath. It is said, also, that calendula is useful in treating the pockets in Pyorrhœa Alveolaris, after scraping; if so used, chloride of zinc (40 grains to ounce) should be used, together with the calendula. Calendula enjoys some reputation in the treatment of irritable pulp.

Abstracts of British & Foreign Journals.

THE INDEPENDENT PRACTITIONER.

THE HERBST METHOD OF FILLING TEETH.

By C. F. W. Bœdecker, D.D.S.

Dr. Bœdecker proposes in this paper to describe the recent improvements in Herbst's system. He points out the advantages of that system are :—

1st. Better adaptation for the walls of a cavity than any other system renders possible.

2nd. The saving of time.

3rd. Increased facility in some of the most difficult operations (as proximate surfaces of the molars and bicuspids).

4th. Gold can be perfectly adapted to the thin walls of enamel without danger of fracture.

5th. The introduction of gold, when done by this method, is much less annoying to the patient, and less laborious to the operator.

The instruments used for this method have been very much modified; they are mostly ordinary smooth burnishers, of which there are three sets : one set of engine points (Herbst), one of hand instruments (Herbst), and one of bent hand instruments (Abbott). Of the old set of steel engine instruments, only a few are now employed, although sometimes all can be used. The most important of them is the roof-shaped instrument, of which there should be several sizes. These can easily made out of a broken bur, as follows : The broken instrument is put in the hand-piece of the engine, which, while rotating rapidly, is ground upon an Arkansas stone, or sandpaper, the instrument should lie obliquely on the stone or sandpaper, like a pen in writing, and be quickly moved, drawing it from one side to the other.

The larger instruments are mostly intended for the use of amalgam and tin. The pointed instruments are used for finishing and condensing the edges of proximate fillings. Dr. Bœdecker adds to these three very small, round points, in shape resembling a round cavity bur. They are designed for the use of small proximate cavities in incisors.

Agate, blood-stone, or garnet rotating instruments are better than those made of steel. Gold does not cohere upon them. The surface of a gold filling, which have been condensed by means of an agate or garnet instrument, is very much harder than a filling which has been inserted by steel-points. But a great drawback in the use of stone instruments is their liability to fracture. Herbst exhibited some agate points which had been set in such a manner that only about one thirty-second of an inch of the stone protruded from the steel mandrel, and they would withstand considerable pressure before breaking. These stone points are intended to be used for direct pressure, but for larger surfaces Herbst has of late employed round agate or garnet beads fastened upon a mandrel with sulphur, and these are intended to be used for lateral pressure, especially in finishing, grinding or labial surfaces. Stone points should not be polished, but roughened upon a corundum stone, while rotating in the engine.

To secure a better union between the different layers of gold when stone instruments have been employed for condensing, the surface of the gold should be roughened by means of a serrated hand plugger, for which purpose Herbst employs a freshly broken excavator.

Dr. Abbott's set is composed of bent burnishers, for places inaccessible to a straight instrument.

In the Herbst method, all complicated cavities (*e.g.*, proximate ones) possessing one, two or three lateral walls, are converted into simple ones (such as cavities involving the grinding surfaces of molars, and having four lateral walls) ; this is done by using a proper matrix. The matrices are made of steel, German silver, wood or shellac, or the Jack matrices may be employed. For the proximate surfaces of molars and bicuspids, either the German silver band matrix should be used. The German silver band matrix can be made as follows : A piece of this metal, No. 32, about one inch in length and as wide as necessary, is bent around the tooth to be filled, so that the metal ends come to the tooth's buccal surface. It is then compressed around the tooth by a pair of specially made pliers. The ring is withdrawn, a little soldering fluid applied united by tin solder. If the tooth to be filled stands alone, the German silver matrix must be strengthened, either by soldering a thin brass wire around it, or by flowing tin solder upon the outside of the matrix wherever strength is required. In soldering, no tin must be allowed to run to the inside of the matrix, especially that part which faces the cavity to be filled, or the tin will touch the rotating instrument, and be incorporated into the filling and impair the cohesion of the separate layers of gold. The matrix must be thoroughly cleansed after soldering, which can best be done with the dental engine, by means of a piece of cotton wound around an old engine bur dipped in moistened pumice. The watch-spring matrices are made out of a piece of watch-spring saw, as follows: A piece of saw half an inch long, as broad as the cavity is deep, is cut off and heated over a spirit flame until it is dark blue. The points of the matrix which are to rest on the cervical edge of the cavity are well rounded off, that in cavities extending under the gum it may be pushed down without injuring either the lingual or buccal portion of the gum. The lateral ends of the matrix must be bent like a clasp around the lingual and buccal portion of the tooth to be filled. When thus prepared, it may be secured by one or two wedges of wood, or ordinary pins, inserted, one from the buccal the other from the lingual side. These wedges should be placed near the gum, between the matrix and the adjoining tooth, firmly pressing the former against the edges of the cavity. In adjusting a matrix in all mesial cavities it must not quite reach the grinding surface of the tooth, or it will obstruct the entrance to the cavity. All the steel matrices may be saved and used again. When two cavities in bicuspids, or molars, face each other, if this plan fails, the matrix, being placed in position, may be secured by filling one of the cavities with cotton or shellac.

For filling in the proximate cavities, when opened from either the labial, the buccal, or the lingual side, a piece of thin steel spring about four to six inches long, and one-eighth to one-fourth of an inch wide may be used, as a matrix. Across one end of this spring a piece of German silver or brass tubing tin soldered, so as when the spring is in position between the teeth to be filled, the tubing prevents it from being pulled through. In other instances, one end of the steel spring may be fastened into a small piece of shellac, and while this is yet soft the whole may be pressed into the desired position. This form of matrix is especially applicable for teeth with large crowns and narrow necks, such as lower bicuspids, when the steel spring without the shellac would impinge upon the gum. This steel spring may also be used as a protection to a neighbouring tooth during the preparation of the cavity.

In some instances, where the lingual walls of upper incisors to be filled from the labial surface, are not broken away, a piece of German silver, about one inch in length, and wide enough to wholly cover the cavity in the lingual surface of the tooth to be filled, may be used as a matrix. Insert it between the proximate surfaces of the incisors containing the cavity, and bend one end of it so as to cover the cavity in the lingual surface; the other end is bent out of the way, over the labial surface of the adjoining tooth.

If a cavity from the lingual surface of an incisor tooth is to be filled, the matrix must be reversed.

For filling the proximate surfaces of incisors when their lingual walls are much broken, as well as in contour operations, a matrix of shellac is employed, made as follows: A piece of shellac, the size of a large walnut, is warmed over a spirit lamp to the consistency of putty, and after applying the rubber dam, this is pressed against the lingual wall, extending a little over the cutting edges of four or six of the teeth. When hard, it is again removed from the mouth, cooled in water, and a small piece of steel spring warmed over the flame of a lamp is inserted in the shellac at the place corresponding to the proximate surfaces of the tooth or teeth to be filled, and, while yet warm, the matrix is replaced in the mouth, and adjusted as required. The piece of steel spring must not quite reach the labial surface of the tooth, or it would obstruct the entrance of the cavity during the introduction of the gold.

The matrices used for contour operations of incisors are made in the same way; but besides the steel matrix of the proximate surfaces, an additional one should be inserted corresponding to the cutting edge of the tooth to be restored.

During the introduction of the filling material, the gold, which (when unannealed) apparently shows no signs of cohesion, working as soft as tin foil, when burnished, becomes somewhat cohesive.

The gold best adapted for this method of filling are very soft cylinders. If foil is used for the first layers of the operation, Nos. 3, 4, and 5 are the best for the purpose. The leaves are cut into halves, and rolled into a rope between the fingers, and cut into pellets of required length; or the sheet may be divided into squares from one-half to one inch, which are formed into pellets. The foil, as well as the cylinders, should never be annealed when used in the first layers of the cavity, except it be a contour operation.

In the starting of a filling, the first layer must be sufficiently large, so that when condensed it will lie securely in the cavity without being supported by an instrument. If too little gold has been put into the first layer, or when a number of too small cylinders are used, and an attempt is made to condense them, the gold will roll about under the instrument, and become too hard to be again adapted to the walls and edges of the cavity. In very large and flat cavities with little undercut, the first layer should be condensed by cotton, as follows: For a large cavity, introduce from 5 to 8 large, soft gold cylinders, without condensing them. A piece of chemically pure cotton, as large as the cavity will hold, is then inserted in the cavity, and it is pressed into every part of the cavity by a rotating burnisher. After the cotton is removed, the gold is further condensed into every depression with agate points.

The Herbst hand instruments, while pressing hard upon the gold, are rotated in the hand about one-half or three-quarters of a turn; but the Abbott instruments are merely moved from side to side. By a rotary motion the gold is much better condensed than by simple pressure. Before the hand instruments are used, they should be rubbed upon a piece of No. 1 sandpaper. After the gold has been thus condensed, the perfect adaptation is obtained by a roof-shaped point, made of steel or agate, in the engine. After the instrument is passed over a piece of sandpaper and is perfectly clean, it is, while rotating, pressed firmly upon the gold, condensing it thoroughly into every depression of the cavity. In condensing, this instrument should be moved round, especially along the edges of the cavity. In using steel points, the engine must not run too fast, and the burnisher, while in motion, must not come in contact with the gold longer than from five to ten seconds, lest the gold be heated to such an extent as to cause discomfort, or even great pain to the patient. The first layer of gold being thoroughly condensed with the roof-shaped instruments, the hand instrument, while rotating, is pressed firmly round the edges and depressions of the cavity. If this makes any deep pits in the gold, then in these places it was not perfectly condensed, and a smaller roof-shaped instrument should be used. All deep pits present in the layer of gold should now be filled up with very small gold cylinders, and thoroughly condensed until the surface of the gold is even. If stone instruments have been employed for condensing, the gold should be roughened by a serrated hand plugger (a freshly-broken excavator), or a rotating steel point in the engine, before another layer of gold is added. All the succeeding layers of gold are manipulated in the same manner, except upon larger surfaces, where we can employ the garnet or agate bead with lateral pressure, when heavy foil (Nos. 30 to 60) gives better results. This may be packed upon the other layer of gold in single strips, burnishing every piece down by means of the rotating instrument, while directing the foil by means of a pair of tweezers in the same manner as in packing heavy foil by the electro-magnetic or mechanical mallet. Herbst introduces a rather thick layer of heavy foil first, and then uses the agate or garnet bead; but in these instances, considerable pressure is required to condense the gold perfectly. In some situations, as in buccal walls of molars and bicuspids, when the gold cannot be condensed by direct action of the instrument, the right angle attachment, or an Abbott hand instrument, should be employed.

Tin is used like gold, either as foil or as Robinson's metal. Nos. 4 to 6 foil is cut in half, and made into a rope with the fingers or a napkin, and cut into pieces of the desired length.

Cavities in front teeth, which it is intended to fill with amalgam or oxy-phosphate, may be lined with a thin layer of gold, which will impart to the thin wall of enamel a very life-like appearance. A large and very soft gold cylinder is compressed between the fingers and immersed in a thin solution of gum-copal (about 2 grs. of gum-copal to ½ oz. of sulphuric ether), this prevents the mercury from uniting with the gold, and so discolouring the tooth. The surplus liquid is expressed with the fingers, the ether allowed to evaporate, and then, by means of a piece of cotton, the gold is pressed into the cavity and thoroughly condensed by a rotation instruments in the engine pressed firmly upon the cotton. Upon the removal of the cotton the thin layer of gold is thoroughly and uniformly adapted to every part of the cavity, which may then be filled, either with amalgam or cement, without future discolouration.

METALLIC ENAMEL SECTIONS. A NEW SYSTEM FOR FILLING TEETH.

By Dr. C. H. LAND, Detroit, Mich.

DR. LAND has devised a means of filling teeth with prepared sections of porcelain, or it may be designated as a system of partial crown work. The method is to burnish a thin piece of annealed platinum plate into the cavity. This takes a perfect impression of its outlines. The surplus edges are trimmed off and platinum pins attached, using pure gold leaf for solder. The pins serve as a fastening, securing the completed section in place and retaining the porcelain body.

Having secured the prepared sections, porcelain paste or body is built upon them and carved so as to imitate the original contour of the lost portion of the tooth. They are then placed on a bed of silex and fused in a gas furnace. This requires 20 mins. for the first biscuit, and fifteen for the second. When completed, they will be a reproduction in porcelain of the lost parts of the natural organs, resembling nature perfectly, both in colour and shape. They are then cemented in the cavity, either with gutta-percha filling or oxy-phosphate cement. When the anterior side of a molar or bicuspid is decayed, the enamel front or veneer is added to the porcelain body. This veneer effectually secures the proper shade and contour of each class of teeth. Porcelain body is built about the tubes, and when fused in the furnace the whole will form a porcelain crown. When cemented in place, it makes a very durable and beautiful piece of work. From this will be seen the great advantage of being able to have the porcelain in a plastic state, as it enables perfect adaptation of the form of each peculiar case with the utmost precision, and this could not be so admirably done with manufactured crowns.

He claims for this method the large amount of tooth substance preserved. In nearly all other modern systems of crown-work there seems to be too much good tooth material cut away. By it the greater portion of the crown can be saved it not being necessary to cut beneath the gum. In nearly every case, sufficient tooth substance can be retained to preserve the pulp alive, and when the teeth are devitalised the major portions of the crown can be left intact, serving for retaining purposes and making it unnecessary, in the majority of cases, to resort to screws or posts. Although the joint may sometimes be conspicuous, it is less so than gold.

The numerous opportunities presented in which this porcelain process will prove to be of great value, is almost without limit. No pulps will be destroyed, and very little tooth substance need be cut away. The use of the rubber dam is largely dispensed with; there are no long and tedious malleting operations in large gold fillings, and no use for amalgam, yet the teeth can be perfectly restored in shape, colour and size, with very little pain or fatigue either to the operator or patient.

Literary Notices and Selections.

SCIENCE AND DENTISTRY: A MONOGRAPH.*

By T. D. Shumway, Boston, Mass.

"The conservation of force,—the highest law in physical science which our faculties permit us to perceive."

For a considerable period, extending over a series of years, my mind has been exercised to determine the higher law in physics which should place the practice of dentistry upon a scientific basis. It early became apparent that, without some well-defined reasons for the cause of decay in teeth, the means employed to arrest and prevent it would be but partially successful, and this only by accident or chance. With this object in view, it has been my purpose, so far as opportunity would permit, to examine with care the discussions that have appeared, and the arguments advanced, from time to time, relating to this subject, important alike to the dentist and the patient. Added to this, also, is the result of personal observation and reflection. From all that can be learned, I am compelled to recognise the conclusion that our faculties are only permitted to perceive, not to know, the highest law in physical science. That dentistry is allied to science admits of no question; that it can never rest upon absolute knowledge is also plain. There are recognised principles, but on mathematical certainties: the rule of mechanics will not apply.

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*Read before the First District Dental Society of the State of New York, at its Eighteenth Anniversary, January 17, 1887.

The teeth in their growth and decay are subject to the highest law which we can perceive, as are all the other parts of the human organism. Dental operations cannot be based upon an exact science any more than a medical dose. "My remedy conquers pain," says the advertising quack, but it never did, nor never can, cure disease. Until science can tell how the heart is set in motion, and what causes it to continue to beat, there can be no absolute knowledge of the cause of decay and dissolution. Huxley said he saw forces which might account for the sap and growth of trees, but he asks the question, "Does this account for my heart-beat?" And his reply was, "On this I do not venture an opinion." When this question is answered, the problem of life will be solved, and demonstrated truth will take the place of the dentist as well as of the doctor. But this by no means detracts from the necessity of dental operations, or lessens the importance of a method of practice based upon the best knowledge it is possible to obtain.

As dentistry, when applied, embraces about all the sciences, this knowledge should be the result of information gathered from whatever sources are presented. The object of this paper is to point out some of the errors and mistakes which have resulted from false theories regarding decay, and the unscientific nature of the so-called scientific methods employed to arrest it; and, in the second place, to call attention to certain fundamental principles which must be obeyed if dentistry is to have a place above that of mere mechanics. Most dental operations are performed upon the teeth with the theory in the mind of the operator that the primary cause of the disease is external. If we see a house that is weather-beaten and black, we say it needs a coat of paint. Why is this? Because air and moisture and heat have produced certain results which tend to disintergrate and destroy the integrity of the building. The dentist observes a similar phenomenon in the teeth, and immediately concludes it must be from the same cause. Investigation begins with this notion already fixed in the mind, and whatever facts are revealed must be made to conform with this preconceived idea. To confirm the truth of this statement, we have only to call attention to the recognised method of practice, and to the rules given to patients regarding the care of the teeth. The devices for making fillings hard, the "knuckling" process, and the permanent separation, are considered the only ways to prevent a recurrence of the disease. These are some of the rules given to patients if they would save the teeth: Candies and other sweets must not be given to children,—this, too, at the age when the system most craves and demands sugar; the use of floss-silk between the teeth to remove foreign matter, which, if allowed to remain, would produce fermentation, which results in a destructive acid; a wash, to correct vitiated secretions, and then corrosive sublimate, or some other powerful agent, known to destroy animal life, to be used in the mouth to kill the germ, which is said to be active and determined in the work of destruction.

But in spite of the laborious efforts on the part of the dentist, and the most watchful care of the patient, the disease goes on. Then comes the theory that the advance in civilisation and the introduction of improved methods in living are potent factors in decay; and as a consequence the coming man must be edentulous. Some well-known scientific writer has said that "much harm has been done by attempting to dissect matter, and to discuss the size, shape, and number of atoms." The reason for this statement is obvious. In discussing the size, shape, and number of atoms the investigator is attempting to deal with matter in the concrete, and abstract or fundamental principles are entirely ignored. The result of such investigation can be only partially complete, for the reason that it is effect rather than cause that is made the subject of study. I believe that much harm has been done by an attempt to base dental operations upon microscopic observation, or upon the result of experiments in a chemical laboratory. If you inquire of the microscopist why teeth decay, he will answer that it is the work of a microbe. If you ask the same question of one who has made chemistry a study, his reply will be that it is the effect of an acid. I would not fail to recognise the full value of the work done by those who have laboured so faithfully and earnestly either with the microscope or by chemical analysis; but it is plain to those who have followed these investigations that they have led to directly opposite conclusions. Finally, after spending a great deal of energy to maintain theories so antagonistic, each side has been forced to admit that both conditions exist at the same time. That bacteria or some other infinitesimal parasites are present in dental caries, appears to be well established; and in the same condition acids are easily detected. The question is at last narrowed to about this, Which of these is first to appear? Does the acid generate the "micro-organism" or does the "micro-organism" make a place for the acid? Now, this is the inevitable result when conditions are made the special subject of inquiry.

The cause remains hidden, and still calls for the highest intellectual perception. The demand is for a broader basis of investigation. If we would know the reasons for an abnormal condition, we must first study the causes that result in health. Physiological must always precede pathological conditions. To know the laws that govern health, we must learn the process by which nature acts. If this, as yet, is only given us to perceive, not to know, how important it is that we seek information from every source, rather than confine investigation within the narrow limits of a vision liable to mistake!

It must be a recognised principle in dental science, as in all departments of knowledge, that the whole is greater than one of its parts. The standard must be one of health, not disease. How could we know that gnarl on a tree is not a healthy condition except by comparing it with the vigorous and sturdy oak? Disease of any kind is the correlative of health, just as in the normal world wrong is simply the right twisted or wrung. If the gnarl on the oak is an abnormal condition, the result of an internal derangement, just as a moral action is either good or bad according to the condition of mind which is the impelling force, it follows that a disease affecting any of the organs of the human body must have its origin in precisely the same way. If these observations are correct, the primary cause of decay in teeth must be sought after from within, and not from without. External decay is merely incidental, and furnishes no groundwork on which to base a method of practice. The question of special interest to the dentist is that of tooth life, not tooth death. He is to learn of the forces set in motion to produce this wonderful piece of mechanism. The microscope and chemical analysis are only auxiliaries, not the end, of investigation. In the study of the anatomy of tooth-substance, we find that dentine is made up of tubuli filled with minute fibres, which reveal a molecular structure, while in the enamel there is an aggregation of matter in the crystalline form. Now, the process of nature in the formation of the enamel, and the growth of the dentine is as distinct and different as that which makes a marble quarry or constructs a tree. In the formation of enamel there is developed an inorganic substance wholly devoid of animal life, with no power to reproduce itself. Whatever trace of organic matter is found in the enamel must be where it joins the dentine, and serves the same purpose as the cementum which covers the external root. In the perfect enamel covering, or Nasmyth's membrane, there can be no organic life. In the dentine there is developed a living structure, filled with organic matter, which is constantly nourished and built up, to furnish protection and support. The growth of the dentine is the same as the growth of a tree inverted.

In the development of the teeth there are set in motion certain forces to build up or make a complete whole—one by a process of aggregation, the other by molecular power. In the one case crystals are made ; in the other fibre is grown. These forces cannot be identical, because the results are entirely different. At the same time, they must be forces that are reciprocal, inseparable, and mutually dependent. This is the correlation of force, the highest law, which our faculties permit us only to perceive. The enamel of a tooth is made of prismatic crystals, and its external covering is as indestructible as the polished surface of the hardest granite. In fact, it is less liable to be affected by outside influences than almost any substance known in the organic world. Among the remains of pre-historic animals, the enamel of the teeth is the only part that does not show the disintegrating effects of time. The remains of mastodon recently exumed near Worcester revealed a perfect enamel structure, while the rest of the bones crumbled at the slightest touch. The dentine being fibrous or molecular, is affected by the same causes that destroy other organic bodies. For a better understanding of these differing but reciprocal forces, it is well to study the process by which a tooth is builded. In the first place, all that there is of the future perfect organ is contained within a follicle, or sac. At the extreme point, which is to be the cusp, or cutting edge, there first appears a calcareous deposit. Immediately outside of this there begins a marvellous process of crystallisation, and from within outward the work progresses until the enamel is completely formed. The formation of the dentine begins outwardly, and is carried on within. Gradually the soft tissue recedes, and its place is filled with a calcified body, made up of fibres corresponding in structure to the woody fibre which makes the substance of trees and plants. This body is nourished with a fluid, which performs the same service for the tooth that the sap does for the tree, and on which it depends for sustenance and support. The method by which the atoms arrange themselves into crystals to form the enamel, could not, by any possibility, take place except from within outward. Those who have watched the process, know with what energy and expansive force the particles assume new position in crystallisation. To form enamel from without inward, would be like filling a barrel with water and then freezing it. There is, in all the atoms of which bodies are made, a tendency to run into symmetric forms. In the process of crystallisation to form enamel, there is always this tendency to assume the same definite arrangement. This arrangement, if not obstructed, will produce an indestructible covering that will withstand the action of any agent with which it may come in contact in the place it was designed to occupy. The tendency of the atoms of which bodies are made to assume definite shapes is in obedience to a universal law. While in the operation of this law there is variety, yet the result is unity. This law is made manifest in the unceasing struggle of animals and plants to return to the original type. As some one has aptly said, "it is the partial reconciling itself to the universal." In the formation of the enamel covering, differing as it does from the process by which the dentine is made, we can discern a fulfilment of this law. We see forces in opposition, but yet reciprocal and mutually dependent. It is a law of correspondence. This correspondence is as necessary in the development of the enamel structure, as is the formation of the bark of a tree to the flower or fruit with which its boughs are laden. To say that a disease which may affect the tree is the work of a parasite, or the result of chemical decomposition, is not dealing with cause, but condition. The difficulty with the tree, if it is attacked with disease, is that the law of correspondence has been broken. The particles which go to make the unit did not run into symmetric forms. External appearance only indicates an internal derangement. This same law applies in the development of a tooth. If there is an abnormal condition, it is for want of correspondence. Had there been a correlation of force, there would have been no lesion. Without a lesion caries could not take place, because the outside covering would furnish an absolute protection. A want of correspondence, or of force in apposition, may then be regarded as the first cause of dental lesion.

The terms, "chemico-vital action," and "nervous force" have application only as they recognise this higher law.

Violation of this law produces the condition which makes possible the action of air and moisture, the elements necessary for chemical decomposition. That lesions do not always result in decay, is because the internal recuperative energy is sufficient to maintain an equilibrium. An examination of a tooth with the rubber dam, as soon as it is erupted, will disclose the enamel lesion, and the place where caries is liable to take place. The number of instances where this will not prove true are so few as only to confirm the rule. Invariably the teeth decay in pairs. A dentist is seldom called upon to fill a tooth, that he does not find the corresponding one in a diseased condition. These teeth were developed at the same time, and the cause which produced the lesion in one, may be looked for in the other. It is true, the extent of the lesion may not be as great, but this only confirms the opinion that the cause was from within, and not from without. Suppose we assume this abnormal condition to be the work of a parasite, then it would appear that they are endowed with sufficient intellectual discernment to make use of method in their plan of attack. Or if, as it is urged, this effect is the result of an acid secretion, why are not all the teeth involved at the same time by this corroding agent? Caries almost invariably appears first in the central incisors, or the grinding surface of the sixth-year molars, where the action of acids would be the least potent. To my mind, it is much more reasonable to believe that the formation of the teeth is the result of two distinct and definite forces, but which are inseparable and mutually dependent; and the disease to which they are liable, is from a want of correspondence during the period of development. If this be the real cause of dental lesion, and external decay is only appearance or phenomenon, a recognition of this higher law, the conservation of force, becomes imperative if the dentist would cope successfully with the disease.

The method employed in tooth-stopping must, from its nature, be mechanical; but to be scientific, there must be a perception of the action of crystalline and molecular force, as a condition of health. Tooth-stopping cannot be said to be remedial, but it should not be obstructive. As the basic principle of life can only be perceived, not understood, the dentist in his operations must, from necessity, deal with effects rather than first cause. There are general rules relating to health to which the dentist may call attention, but the practice of these rules he must leave to the knowledge and understanding, as well as the inclination, of the patient. Certain notions have obtained in regard to the use of coarse foods, which it is claimed have more of the bone-making material. (It is surprising how notions prevail for a time, with only a slight scientific basis.) The conservation of force depends upon a generous, wholesome, nutritious diet, rather than the strict adherence to a set formula, like that regarding oatmeal, which is made palatable only by disguising it with a large supply of sugar and cream.

If the basic principle of life—the highest law which governs growth and decay—can only be perceived, not known, it does not imply that there may not be a method of practice based upon scientific knowledge. On the contrary, a recognition of this law reveals the kind of treatment the teeth should receive. The dentine being molecular or fibrous in its structure, demands a material which, when placed against the dentinal walls, will not interfere with or obstruct the process of restoration going on within. This, first of all, calls for scientific knowledge in the choice of tooth-filling material, which can only be obtained by a study of the law of correspondence. Those who have advanced the electro-chemical theory of decay, call this compatibility. The claims of those who advocate this theory have not received that recognition which its importance demands. The experiments made, no doubt, disclosed what the experimenters claimed—*i.e.*, "an electrical affinity of gold for dentos." The experiments of Plücker and others long since determined that crystalline bodies are definitely affected by magnetism. The reason why gutta-percha will arrest decay is because, it being amorphous, it does not interfere with the action of forces that are reciprocal and mutually dependent, and on which the restoration of the tooth to health depends. Tin, as a tooth-stopping, does not derive its value from any preservative or antiseptic properties, but only because of the difficulty with which it can be made to assume the crystalline form. It is for this reason that its value cannot be impaired by manipulation. As there are objections to the use of either of these materials for permanent tooth-filling, they must remain of secondary importance to the dentist. In the experiments which are to be made in the future, to find a tooth-stopping which will meet the requirements of durability and ease of manipulation, to be successful, the law of correspondence must be recognised. As this seems about as remote as the finding of the philosopher's stone, the profession must make use of such materials as are at hand. Gold will probably remain the most important tooth-stopping for a considerable time. Among all the products of Nature, I know of none more wonderful in its construction than this metal, or none of more special interest to those whose calling it is to engage in filling teeth. The evidence is not wanting to show the regard the profession has generally for gold as a tooth-stopping material. The skill employed in manipulation determines, in no small degree, professional standing. The introduction of new forms of gold, and of improved as well as new appliances in using it, awaken the keenest interest. Among all the subjects brought to the attention of the Dental Societies, gold, and how to use it, has been the one to provoke the most discussion. The popular prejudice is so strongly in its favour, that there are few who are able to pay for it who do not prefer this metal to any of the baser materials. With this demand upon the dentist, a scientific knowledge of the nature and properties of gold, so as to determine where, when, and how to use it, becomes imperative. The conservation of force, the highest law in physical science, is the only rational basis on which to formulate a method of practice. The opinion which recently obtained, that gold is the most dangerous material to use if the teeth are to be saved, I am persuaded would never have found expression had there been a better appreciation of the correlation of force. There are dentists now living who have used gold in filling teeth for upwards of half a century, who never saw anything dangerous in it. On the contrary, they found it the only reliable permanent tooth-stopping. What is the reason for these opinions, so directly opposed to each other? Is it to be found in this, that in using gold, the one recognised and obeyed the law of correspondence, and the other did not? Gold is crystalline in its formation, but when beaten out into thin sheets, or foil, the crystals are broken and laminated, and its physical properties are completely changed. When used in this form against the walls of the dentine, it fulfils the highest law, and the process of restoration going on within is not obstructed.

(*To be concluded*).

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, March 7th, 1887, Felix Weiss L.D.S., Eng., *Librarian, in the Chair.*

On taking his seat, the Chairman said he was sorry to have to state that the President was suffering from the effects of his close attendance on his father during his recent serious illness. The members would, however, be glad to learn that Sir John Tomes was now progressing favourably, and, though not safe from the risks of a relapse, might be considered to be free from any immediate danger.

The Minutes of the previous meeting having been read and confirmed,

The Chairman announced that the following gentlemen had been duly nominated as candidates for membership, and would be balloted for at a subsequent meeting, viz.:

Messrs. William Bromfield Paterson, F.R.C.S., and L.D.S. Eng., 46, Brook Street, W.
Alfred Kendrick, L.D.S. Eng., Bridge House, Taunton.
C. A. Hayman, L.D.S. Eng., Belle Vue, Clevedon, Bristol.

The following candidates were then balloted for and elected members of the Society:—

Mr. Frederick Arthur Canton, L.D.S. Eng., 34, Baker Street, Portman Square, W., as a resident Member; and
Messrs. William Cass Grayston, L.D.S.I., 11, Valley Bridge Parade, Scarborough.
Oswald Fergus, L.D.S., Glasg., D.D.S. Univ. Pennsylvania, 41, Elm Bank Street, Glasgow; and
Walter Glaisby, L.D.S.I., 4, St. Leonards, York, as non-Resident Members.

The Librarian announced that he had received during the last month copies of the last edition of Richardson's "Mechanical Dentistry," and of Harris's "Principles and Practice of Dentistry." The Library had previously contained only somewhat antiquated editions of both these works.

Mr. Augustus Winterbottom showed in full working order what appeared to be a most successful adaptation of electricity to dental requirements, and gave a practical demonstration of its capabilities.

Having about eight months ago met with an accident to his leg, which effectually prevented his using the treadle of the ordinary dental engine, he was obliged to seek some motive power other than his own foot.

Water motors were first tried, but proved unsuccessful, owing to the impossibility of obtaining reliable and adequate pressure. He then turned his attention to electricity, but again met with numerous failures. He tried several kinds of battery, but they all proved expensive and troublesome, requiring more or less constant attention and frequent recharging, as well as being liable to get out of order, and failing to supply an adequate current at the very moment when their continuous working was of the greatest importance.

Becoming wearied with these frequently recurring annoyances, he was beginning to consider the advisability of procuring a gas engine and dynamo, so as to work from secondary batteries, when he was fortunate enough to meet with an electrical engineer, Mr. March, who most successfully grappled with the difficulties and solved the problem. After many experiments and much mutual consultation, a system was elaborated which thoroughly satisfied all ordinary dental requirements. Mr. Winterbottom had derived so much comfort from its use, and had been enabled to perform mechanical operations so much more quickly and efficiently, that he thought it might help some of his brother practitioners if he exhibited the adaptations before the Society.

Mr. Winterbottom then proceeded to explain the working of the apparatus, and expressed his willingness to give a further demonstration at the close of the meeting. The electrical current was generated by a zinc and carbon battery of eight pairs of cells, which would run a double set of apparatus and require no recharging for from fourteen to twenty-one days, according to the amount of work done.

Two solutions were used, nitrate of soda and dilute sulphuric acid, and it could be easily emptied and refilled in about half-an-hour by means of compound syphons. He had had the battery in use for about four months, and had not yet found it fail, even in foggy weather, when it was supplying both light and motor all day. He found that the entire cost of wear and tear, including fluids and new plates, amounted to sixpence a day, or about half-a-crown a week.

The strength of the current was readily controlled by means of a "switch board," by which it was made to pass through a series of resistance coils, and the amount of energy regulated to suit the needs of each instrument.

It could be made to drive the dental engine through the instrumentality of an ordinary electric motor. This was slung to a rod or beam overhead in such a manner that its position could be easily altered, and it was quite out of the way.

The speed could be varied from 1,500 to 4,000 revolutions per minute, and owing to the rapidity and steadiness of its action a tooth could be cut away much more quickly, and with much less pain to the patient, than when the ordinary pedal action was used; it cut also with but little pressure, without any fatigue to the operator, and his body being perfectly steady, the instrument could be directed with the greatest nicety, and without any risk of accidental slips. This ease and painlessness were especially noticeable in cutting down roots, or where a considerable portion of a sound tooth had to be cut away; in such cases the saving of time was very considerable. So also in cutting down gold fillings, easing bites, inserting Herbst's fillings, &c. With proper adjustment the current could be made to work the Bonwill mallet, and lastly it was extremely useful for illuminating purposes.

He used three forms of electric light. One was an adjustable standard light with reflector; another the small light for examination in the mouth, with which all were well acquainted, whilst the third was attached to a band fitting round the head and forehead of the operator; this was very useful for operations in which the operator would otherwise unavoidably get in his own light. These lamps gave a steady white light, the intensity of which could be varied at will, and he had not found them in any way trying to the eyes. Indeed, he had been assured by an ophthalmic surgeon that no danger to the sight need be feared from this cause, but that, on the contrary, straining the eyes by working with a bad or insufficient light was far more harmful.

The Chairman thanked Mr. Winterbottom for the trouble he had taken in bringing all his apparatus and fitting it up in the room, and congratulated him on his very successful demonstration. He knew that other members had been experimenting in the same direction, and some of them would, he had no doubt, have something to say on the subject.

Mr. George Brunton said he had made trial of the electric light for dental operations, and could not speak as favourably of it as Mr. Winterbottom had done. One great objection to it was the strong shadow it threw. He would suggest to Mr. Winterbottom that a reflector coated with plaster of Paris would be found to give a much pleasanter light than an ordinary metallic reflector.

With reference to the engine motor, he thought, judging from his own experience, that the *lowest* speed mentioned (1,500 revolutions per minute) was too fast.

Mr. E. Latchmore said he had been using a similar arrangement to that exhibited by Mr. Winterbottom for about four months, and he readily endorsed all that that gentleman had said in its favour. As to the speed, he did not find the highest rate (4,000 revolutions per minute) too much. It did its work with great rapidity, and almost painlessly, its advantages being specially noticeable in such an operation as cutting away part of the crown of a molar to get at a posterior root. He had recently had a difficult extraction in which he found it most useful. Finding it quite impossible to remove a lower canine by the ordinary methods, he gave ether, extracted the first bicuspid, rapidly cut away the septum between it and the canine, and levered out the latter tooth from behind. He could not have done this with the ordinary pedal engine, except with a considerable amoun of difficulty.

Mr. Hern showed for Mr. C. D. Davis, of Brixton, a good specimen of overgrowth of the rodent teeth of a rabbit, due to mal-apposition.

The Chairman then suggested that as there was an important paper on the agenda, and it was desirable to allow as much time as possible for discussion, the other Casual Communications, which were put down for that evening should be postponed to the next meeting.

This having been agreed to, the Chairman called upon Dr. Dudley Buxton to read his paper on "The Physiological Action of Nitrous Oxide." (*See page* 301).

Dental News.

APPOINTMENTS.

James Stewart Durward, L.D.S., R.C.S., Ed., has been elected to the Senior Staff of the Edinburgh Dental Hospital.

William Wilson, M.B., C.M., Ed., L.R.C.S., L.D.S., has been elected to the Junior Staff of the Edinburgh Dental Hospital.

Mr. W. H. Kirton, L.D.S., R.C.S.I., Elm Grove, Southsea, has been appointed Surgeon Dentist to the Portsmouth and South Hants Eye and Ear Infirmary.

VACANCY.

Dental Surgeon to London Dental Hospital.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

MEDICAL REGISTRATION.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

The accompanying opinion with regard to registration is of much importance to those gentlemen who already hold, or will hold before June 1st, a single qualification, and who desire to be on the Medical Register.

After that date, as the law now stands, only those who obtain the conjoint diplomas will be admitted to registration. The M.R.C.S. and L.S.A., for instance, will not do, but only the M.R.C.S. and L.R.C.P., and those only if they are passed at a conjoint examination.

Yours faithfully,
MORTON SMALE.
Hon. Sec. British Dental Association.

The Dental Hospital of London, and London School of Dental Surgery, Leicester Square, W.C.

April 6th, 1887.

"OPINION."

"AFTER 1st June no person can be put on the Medical Register by virtue of a single qualification, such as a diploma in surgery, or a diploma, or licence, in medicine.

"Up to 1st June next, any person can be put on the Register by virtue of such single qualification, and being once on, he may obtain additional qualifications by subsequent examinations, and such additional qualifications may be added to, or substituted for, those already on the Register.

" But after 1st June next, no one can be put on the Register who has not passed the qualifying examinations required by the Act of 1886, that is, an examination in Medicine, Surgery, and Midwifery; and these three subjects must be taken up together ; hence, anyone who has now a single qualification and intends to obtain further qualifications, after June 1st, should take care to be on the Register before that date, for if he is not on it, his single qualification will not afterwards entitle him to Registration."

HOW TO COVER TIN FOIL WITH GOLD.—A QUERY.

To the Editor of the "British Journal of Dental Science."

SIR,

In your valuable Journal of Feb. 15th ult., among "Casual Communications" you mention a method for covering rubber plates with pure gold by the use of electro plating, employing a battery. Now, Sir, I have at present under my care, a gentleman who is unable to wear a vulcanite plate with comfort for any length of time, on account of a stinging heat and pricking sensation engendered by its use. Worse than this, pimples (ulcers ?) form on his gums, so that at night he cannot masticate properly. To test the case, I covered the dentine with tin foil, except the air chamber. This procedure at once cured the trouble. I am now anxious to cover the dentine with pure gold instead of tin foil by electro-deposition, but have failed in my attempt to do so. I have tried several sorts of plumbago, but to no purpose. I should be glad if any of your readers can throw light upon the subject, and suggest a satisfactory method to be pursued.

I am,
Your obedient servant,
"ENQUIRER."

INTERNATIONAL MEDICAL CONGRESS: HONORARY OFFICERS OF THE DENTAL SECTION

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

As several lists of Honorary Officers have already appeared in several dental journals—from which one would gather that no representatives from our own country have been appointed —may I be allowed to state that the lists already published, while probably correct enough as far as they go, are entirely unofficial; and that, from reliable private information, I know the due recognition of British representatives of the Congress is receiving the attention of the Officers and Council in America.

I am, &c.,
GEO. CUNNINGHAM.

2, King's Parade, Cambridge.
April 4, 1887.

HOSPITAL REPORTS.

Statement of work done at the Dental Hospital of London, Leicester Square, W.C., for the month ending 31st March, 1887:—

Extractions	Adults	930
	Children under 14	430
	Under Nitrous Oxide	659
Gold Fillings		493
Other Fillings		1210
Advice, Miscellaneous, and Dressings		797
Irregularities		179
Total		4698

R. Wynne Rouw,
House Surgeon.

Monthly Statement of operations performed at the Dental Hospital, Birmingham, from March 1 to March 31, 1887:—

Number of Patients attended		954
Extractions	Children under 14	830
	Adults	
	Under Nitrous Oxide and Ether	28
Gold Stoppings		0
Other Stoppings		87
Advice and Temporary Filling		86
Irregularities of the Teeth		5
Miscellaneous		32
Total		1068

W. Palethorpe,
House Surgeon.

Work done at the Victoria Dental Hospital of Manchester, during the month of March, 1887:—

Number of Patients attended		981
Extractions	Children under 14 Adults	636
	Under Nitrous Oxide	53
	,, Cocaine	8
Gold Stoppings		61
Other Stoppings		105
Miscellaneous		261
Total		1124

Henry L. Knoop,
Hon. Secretary.

Monthly statement of operations performed at the Dental Hospital, from March 1 to March 31, 1887 :—

Number of Patients attended		2864
Extractions	Children under 14	421
	Adults	673
	Under Nitrous Oxide	711
Gold Stoppings		156
Other Stoppings		668
Advice and Scaling		540
Irregularities of the Teeth		341
Miscellaneous		288
Total		3798

C. A. Pattinson,
House Surgeon.

Communications have been received from—

Secretary of Odontological Society; Mr. Geo. Robinson, Oamarn, Otago, New Zealand ; Secretary Midlands Branch British Dental Association ; Mr. Palethorpe, Birmingham ; Secretary Odonto-Chirurgical Society ; Mr. John Humphreys, Birmingham ; Mr. Morton Smale, London ; Mr. Henry L. Knoop, Manchester ; Mr. Christopher Heath, London ; Mr. H. Williams, London ; Dr. George Cunningham, Cambridge ; Mr. F. Lord, Blackburn ; Mr. Wynne Rouw, London, Mr. C. A. Pattinson, London.

ERRATA.

Page 634, line 21, for "dia*thes*," read "diathesis."

Page 635, line 13, for "improvements 'on the pivot' ?" read "improvements to date."

Page 636, line 3, "that the greater care, &c.," omit "the."

BOOKS, JOURNALS, ETC., RECEIVED :—

British Medical Journal, L'Art Dentaire, Western Dental Journal, Pharmaceutical Journal and Transactions, Revista Argentina de Ciencias Medicas (Buenos Ayres), Southern Dental Journal, Glasgow Medical Journal, Chemist and Druggist, Monattsschrift für Zahnheilkunde, L'Odontologie, Independent Practitioner.

British Journal of Dental Science.

No. 463. LONDON, MAY 1st, 1887. Vol. XXX.

FIVE CASES OF TUMOUR OF THE JAWS TREATED BY EXCISION.

By Christopher Heath, F.R.C.S. (*Holme Professor of Surgery in, and Surgeon to, University College Hospital.*

The following are good examples of the various growths commonly met with about the jaws. Ossifying sarcoma is a form of disease of comparatively recent recognition, but no doubt many of the cases of osteoma of former years were examples of this growth. It is the least malignant of the sarcomata, and if the whole of the disease is removed there is a good prospect of non-recurrence. The cases of squamous epithelioma, whilst the most common, are the most unsatisfactory of all jaw tumours. The disease has such a persistent tendency to spread that, unless taken in the early stage, it is quite impossible to be sure that the entire growth has been extirpated, and recurrence is probable. The operation in Case 2 was an extremely severe one, every particle of visible disease being removed, and yet rapid recurrence took place and ended in death. In Case 3 the disease was limited to the palate, and it was probably on account of the modification of the operation thus required that time was lost, and the blood got from the mouth into the windpipe. Immediate laryngotomy and suction relieved the urgent asphyxia, but no doubt the lobular pneumonia, which eventually proved fatal, must be attributed in part to the inhalation of blood. It was partly in consequence of the experience gained in this case, and partly on account of the disease projecting principally into the mouth, that the inverted position was adopted in operating upon Case 4. This method has the undoubted advantage of keeping the blood away from the air-passages, but its mechanical inconvenience is very great, and it would be almost impossible to remove the entire upper jaw in this position. Case 5 was an example of the rare "glandular" tumour, which tends to become cystic, and is apt to recur in the form of epithelioma after many years. In all these cases iodoform was freely used, both at the time of operation and afterwards, and, so far as has been seen, without the least toxic effect.

Case 1. *Ossifying Sarcoma of Upper Jaw: Excision of the Jaw: Recovery.*—S. E., a married woman, aged 36, was admitted on June 15th, 1886. She was not aware than any member of her family had suffered from new growths. She stated that about twelve months previously she noticed a hard and painless swelling of the gum of her left upper jaw. She was at the time suffering from toothache in her left wisdom tooth, and attributed the swelling to that cause. About five months later the anterior surface of the jaw became enlarged, and since then the swelling had steadily increased in size. On admission the left upper jaw was much enlarged, and of bony hardness throughout. The mucous membrane of the alveolus was much stretched, but quite healthy. The left half of the hard palate was considerably depressed; the mucous membrane covering it was superficially ulcerated. The left nostril was blocked, but there was no displacement of the left eyeball; the lymphatic glands beneath the lower jaw were not enlarged. On June 16th, the patient being under the influence of chloroform, Mr. Heath divided the upper lip in the middle line, and prolonged the incision round the ala of the nose, to the inner angle of the orbit, and thence for about an inch along the lower margin of the orbit. After dissecting up the cheek-flap, Mr. Heath found that removal of the growth was impossible without taking away the whole of the left upper jaw. This he did in the usual manner, and in wrenching the bone out of its bed, a portion of the internal pterygoid plate, with some of the internal pterygoid muscle, was torn away. The bleeding was temporarily arrested by sponge pressure, and permantly by the actual cautery. The lip was adjusted by two harelip pins and a twisted suture, and the rest of the flap was stitched with chromicised catgut. The line of the incision was painted with collodion. The mass removed consisted of a bony growth involving the walls of the antrum, and spreading inwards on all sides so as to reduce the cavity of the antrum to the dimensions of a mere cleft. The internal pterygoid plate was much enlarged and involved in the growth. The anterior part of the alveolus and the nasal process were not implicated by the growth. The bone was soft, and could be readily cut with a knife. Under the microscope it was found composed of imperfectly ossified spicules of bone. There were no Haversian systems, and the corpuscles included within the bone had a close resemblance to those between the bony spicules. The soft tissue varied in amount in different parts of the growth; it was composed chiefly of round cells, but in many places it contained spindle cells as well. The matrix in some places was homogeneous, and in others slightly fibrillated. The ossification extended to about a line from the surface of the growth. The surface was occupied by round and spindle cells, and between the growing spicules of bone the cellular elements were much more abundant than in the older portions of the growth. On the third day after the operation the harelip pins were removed, but the twisted suture was not disturbed. On the sixth day some of the stitches were removed, and on the eighth day the rest of them were taken out. The wound had healed by first intention throughout. The cavity was frequently washed out with Condy's fluid, and dusted over with iodoform. The temperature rose to 101.8 deg. F. on the second and third days after the operation, and then fell. The patient made a good recovery in all respects, and was discharged on the eighteenth day after the operation.

Case 2. *Squamous Epithelioma of Upper Jaw: Excision of the Entire Jaw: Death.*—M. H., a woman, aged 57, was admitted on July 29th, 1886. She stated that about ten weeks before she first noticed some swelling of her left cheek. Six weeks later she noticed a sore in the buccal pouch, and on pressing the tumour blood and "matter" escaped from it. The bleeding had recurred frequently since. She had been unable to take solid food for the last fortnight. On admission the left cheek was much bulged by the growth, which raised the lower eyelid and depressed the angle of the mouth and the ala of the nose. The limits of the swelling on the cheek were as follows: outwards to a point an inch outside the outer canthus of the eyelids and half an inch below it, inwards to the nose, upwards to the margin of the orbit, downwards to a quarter of an inch above the outer margin of the upper lip. All the teeth behind the first bicuspid were absent. The bone of the left half of the hard palate was absorbed, and the soft tissues of the palate were extensively ulcerated. No enlarged lymphatic glands could be detected. On August 4th, 1886, the patient being under the influence of chloroform, Mr. Heath made an incision as in the last case, but prolonged it outwards to the external angular process. The flap was dissected up, and found implicated by the growth. The hard palate was sawn through, and the lower half removed with bone-forceps. A piece of the malar bone was also removed with forceps. The remainder of the growth was removed with scissors as far back as the posterior wall of the spheno-maxillary fossa. The pterygoid plates were also removed. A large mass of the growth near the pillars of the fauces and in the cheek was cut away with scissors. There was free bleeding from the internal maxillary artery, which was arrested with the actual cautery. The upper part of the cavity was packed with wool smeared with chloride of zinc paste. The rest was mopped out with a solution of chloride of zinc (40 grains to the ounce), and dusted over with iodoform. The flap was adjusted as in the last case. Two drachms of brandy were administered at once, and a drachm every hour was ordered to be given during the night. The chloride of zinc plug was removed on the third day after the operation. Some of the stitches were removed on the eighth day, and the rest on the thirteenth. The wound healed well. The mouth was kept clean by frequent washing with Condy's fluid. The temperature kept normal, with the exception of an elevation to 100 deg. on the day after the operation, and 101.2 deg. on the fourth day. The patient at first did very well, but about a month after the operation she began to get feeble, and a fortnight later extensive recurrence was noticed. The patient gradually sank, and died two and a half months after the operation. The growth was a rapidly spreading squamous epithelioma. The majority of epithelial cells were small, but in some parts they were squamous and arranged in nests. The tissue between the epithelial elements were embryonic connective tissue. At the necropsy extensive recurrence was found at the primary seat and in the lymphatic glands of the neck, but none was found in the internal organs. The lungs were emphysematous and hypostatically congested.

Case 3. *Squamous Epithelioma of the Alveolus of the Upper Jaw: Excision of Growth: Laryngotomy during the Operation, and Blood sucked from the Windpipe: Death from Lobular Pneumonia.*—E. P., a man, aged 51, was admitted on September 16th, 1886. He stated that, about seven weeks previously, he noticed on his left upper alveolus a swelling, which he thought was a gumboil. The swelling had continued to increase in size. On admission there was a new growth involving the left upper alveolus and the adjacent parts of the soft tissues covering the hard palate between the left lateral incisor and the last molar tooth. The second bicuspid and the first two molar teeth had been removed, and the portion of alveolus thus exposed was entirely involved in the growth. There were no signs of distension of the antrum, and there was no sinus leading into it from the alveolar border. The submaxillary lymphatic glands were not enlarged. On September 22nd, the patient being placed under the influence of chloroform, Mr. Heath divided the upper lip and dissected up the tissues of the cheek for a short distance, and then sawed through the hard palate. The patient's mouth and nose rapidly filled with blood, and respiration ceased. Laryngotomy was at once performed, and the blood sucked out of the windpipe. The hard palate, the alveolus, and the anterior wall of the antrum were raised with an elevator, and removed with bone-forceps. The cavity was plugged with a sponge so as to stop the bleeding temporarily ; it was permanently checked with the actual cautery. The soft tissues of the lip were united and the antiseptic treatment of the wound was carried out as in the previous cases. The laryngotomy-tube was removed on the day after the operation. The patient at first appeared to be doing well. His temperature ranged between 99.2 deg. and 101.2 deg. until the fifth day, when it rose to 102.4 deg. He became restless and delirious. His pulse beat 140 times in a minute, and his respirations quickened to 36 times in a minute. He became very drowsy, and died on the seventh day after the operation. At the necropsy a good deal of muco-pus was found in the large and small bronchial tubes. There were a number of scattered patches of pneumonia in both lower lobes. The majority of these were in a state of red hepatisation, but some of them were turning grey. The other organs were healthy. No secondary growths were found.

Case 4. *Squamous Epithelioma of Upper Jaw: Partial Excision of Jaw: Recurrence.*—M. G., a woman, aged 66, was admitted on October 4th, 1886. Ten weeks previously she was attacked with severe pain about her left upper jaw and behind her left eyeball. Four weeks later she noticed swelling of her left cheek and the left half of her soft palate, and since that time she had been unable to take solid food. On admission, the left cheek was very full, but the soft tissues of the cheek appeared healthy. The posterior part of the left upper alveolus was much enlarged, and projecting from it there was a mass of new growth measuring one inch and a half in diameter. On the outer side it passed upwards beneath the structures of the cheek, and caused the fulness in that region. It also extended beneath the mucous membrane of the hard palate, but the bone as a whole did not appear to be depressed. The eyeball was not displaced, but the left nostril was partially obstructed. No enlarged glands could be detected. On October 13th, the patient being placed under the influence of chloroform, her head was bent back over the edge of the table, and supported in that position. Mr. Heath dissected the cheek from the lower part of the jaw, and wrenched off the projecting mass of growth with his finger, and then, finding that there was much of the growth remaining, he determined to excise the lower part of the jaw. He divided the upper lip in the middle line, and prolonged the cut round the ala of the nose, and dissected the latter from the margin of the anterior naris. The nose and the cheek were then held out of the way, and the hard palate was divided in the middle line. Mr. Heath next wrenched off the alveolus with bone-forceps, and then removed a number of fragments of bone and growth with his fingers and with scissors. The bleeding was rather free. A few points were touched with the actual cautery, but as free venous bleeding continued, the cavity was plugged with a sponge, and the head was raised. The sponge was now removed, and no return of the bleeding occurred. The flap of lip and cheek was adjusted as in the other cases, and the subsequent treatment was similar to that followed in them. The evening temperature varied between 100 deg. and 101.2 deg. for six days after the operation, and then the temperature remained normal. The patient was rather feeble for some days, but she nevertheless made a good recovery from the operation, though there appeared to be some recurrence of the growth in the anterior part of the soft palate. The growth presented the usual appearances of a squamous epithelioma. The patient was discharged on the nineteenth day after the operation. Mr. Heath saw this patient some weeks after at her own home with extensive recurrence of the growth.

Case 5. *Enamel-organ Tumour of Lower Jaw: Excision of half the Jaw: Cured.*—J. P., a man, aged 34, was admitted to the hospital on January 24th, 1887. He stated that his father died of cancer of the stomach, but, with that exception, there was no family predisposition to new growths. About eighteen years previously he first noticed a lump on the left side of his lower jaw, just behind the left angle of his mouth.

A few weeks later the swelling was lanced, but the wound closed; a few months afterwards the swelling increased in size, gathered, and burst into the mouth, and since then there had been a continuous discharge from the sinus. Five years previously the patient was in his hospital, and at that time his left cheek was uniformly swollen; the lower jaw was not enlarged. There was a sinus in the cheek which did not lead to bone. The left upper wisdom tooth had not come through the gum, and it was thought that that tooth might be the source of irritation. The second molar was removed in order to give more room for it. About twelve months later the wisdom tooth came through the gum, but the patient experienced no relief, and since then the lower jaw continued to increase in size. During the last two months before admission to the hospital, the increase in size had been more rapid. On admission to the hospital, the patient's left cheek was much swollen, and the posterior part of the body and the ramus of the lower jaw were found much enlarged. At the anterior part of the swelling there was a sinus leading into the jaw. The greater part of the swelling was hard, but some parts of it were soft and elastic. The lymphatic glands beneath the jaw were not enlarged. On January 26th, 1887, the patient being under the influence of chloroform, Mr. Heath made an incision from the symphysis to the angle of the jaw, and, after separating the tissues from the bone, he found that the ramus of the jaw was extensively implicated, and that the removal of the growth could only be effected by excising half the jaw. This was done in the ordinary way, but some trouble was experienced in disarticulating, owing to the difficulty in depressing the jaw, and to the fragility of the bone, which broke near the condyle in the attempts to remove it. The facial and inferior dental arteries were tied. A branch of the internal maxillary was also tied, but as the latter vessel was found lying exposed in the wound, it was ligatured on each side of the branch and divided. Iodoform powder was blown over the surface of the wound; the skin was adjusted with catgut sutures, an opening for drainage being left, and dressed with iodoform powder and salicylic wool. The parts removed consisted of the entire left half of the lower jaw, which was greatly expanded by a central new growth. The growth was surrounded by bone everywhere but opposite the sinus which was present on the alveolus about one inch and a quarter from the middle line of the bone. The bone was not implicated by the growth, and after hardening in spirit the growth shrank away from the bone, which was left quite smooth. On section it appeared as though there had been a cyst in the jaw, and that by projection into it of intra-cystic growths the cavity had been filled up. The growth presented microscopical characters which closely resemble the enamel-organ, and which Falkson and Bryk have already described. It would probably be considered by Mr. Eve as allied to the multilocular cystic growths which he has described as springing from the epithelium of the gum. It will shortly be shown at the Pathological Society. The temperature reached 101.2 deg. F. on the first four days after the operation. It then fell, and remained normal after the tenth day. Some loss of power in the lower facial muscles resulted from the operation. The wound healed well, and all the stitches were removed on the thirteenth day after the operation. Convalescence was delayed by the occurrence of much swelling of the cheek, unattended with fever. No suppuration occurred, and the swelling was rapidly subsiding when the patient was discharged, about a month after the operation.

ON THE PHYSIOLOGICAL ACTION OF NITROUS OXIDE GAS.

By Dudley W. Buxton, M.D., B.S. Lond., M.R.C.P.
Anæsthetist in University College Hospital; the Hospital for Women, Soho Square; and the London Dental Hospital.

(*Continued from page* 358.)

Knowing that one of the greatest and gravest dangers which beset the induction of anæsthesia is heart failure, it becomes matter of very great importance for us to determine the behaviour of nitrous oxide towards the heart and vascular system in general. My investigations in this direction have been made to ascertain the action of the heart and the variations of blood pressure under nitrous oxide; and further, to determine how far the variations seen when nitrous oxide was exhibited were due to that body, and how far to the coincident deprivation of oxygen.

The animals selected were dogs and cats, but as the results were practically uniform it is unnecessary to particularise the experiments. I must again admit my great indebtedness to my friends Professor Victor Horsley, Mr. Bradford, and Professor Schäfer, through whose kindness alone the research was practicable.

The heart's action does not become much affected under nitrous oxide, and even in cases in which that gas is pushed until complete cessation of respiratory movements occurs, the heart still continues to beat, its action gradually growing weaker. In no case have I seen any tumultuous action of the heart or a sudden cessation, only the gradual sinking to rest noticed above. The attempt at narcotising animals and timid persons produces a temporary acceleration of heart-beat, but as soon as the intellect becomes under the influence of the narcotic this acceleration passes off and the heart-beats become regular and strong and somewhat slowed. It will be remembered that these results are in accord with the statements already published by me, and based upon numerous sphygmographic tracings taken of the human radial pulse.

The blood pressure under nitrous oxide inhalation has the following peculiarities. For the first period it shows little change; but subsequently a fall of pressure takes place. Upon allowing the animal to inhale air, the blood pressure recovers itself, but only gradually, and by passing through a phase of somewhat irregular curves. These curves are not respiratory, as they take place even when the animal is completely paralysed with curare, and artificial respiration is maintained. In some cases a slight, but very slight, rise in the blood pressure took place, but a rise of blood pressure which persists for a notable time appears always to follow the nitrous oxide inhalation. Control experiments were conducted to test the effect upon blood pressure when the animal is deprived of air. These were done upon curarised animals in order to avoid the interference caused by dyspnœic convulsions. As soon as the air supply was cut off, the blood pressure began to go up, and rapidly increased until the heart's action, which lessened in force *pari passu* with the heightened blood pressure, became so weak that it was necessary to allow air to enter the lungs. The blood pressure then resumed its normal height very quickly; but the rise which follows after nitrous oxide administration does not appear to ensue after asphyxia.

It seems to me, upon reviewing the nitrous oxide experiments, and controlling them by the asphyxia experiments, that nitrous oxide itself has no very marked influence upon the heart or vessels; that what action it has, tends to steady and slow the heart, and if anything to strengthen it, and that the action is somewhat prolonged. The vessels, at first almost unaffected, later on undergo a peripheral dilatation leading to a lowering of blood pressure. This, however, is true only when reservation is made; for, as we shall see later on, the splanchnic vascular areas are contracted at first.

Upon this last statement I have some additional evidence to offer. A good-sized frog (*Rana temporaria*) was placed beneath a dome-shaped glass vessel, so arranged that the web of one foot was outside the vessel and could be examined under the microscope. The dome was emptied of air and kept full of nitrous oxide, and the frog carefully noted while the web was examined. It was necessary to keep the whole animal in nitrous oxide, as cutaneous respiration is very active in the frog. At first the circulation in the web was found to be slowed; at the same time the minute vessels were seen to dilate, and this slowing and dilatation both became more marked as time went on. Changes also appeared to develop in the corpuscles by which they took on a flattened compressed appearance. At length the respirations, which had become slower and slower, became almost extinguished, the capillary circulation in some areas was almost in a condition of stasis, whilst throughout the field extreme slowing had occurred. At this point the frog was allowed free access to air, and at once the respiration quickened, the blood flow increased in rapidity, becoming many times more rapid than under the gas. The corpuscles resumed this normal aspect. The results of such experiments upon the frog point to a peripheral dilatation of capillaries, and of this further evidence has yet to be adduced.

It needs no argument to show that a vascular viscus, like either the kidney or the spleen, must under variations of blood supply undergo variations in size. If, therefore, it were possible to enclose either viscus in an air-tight receiver communicating with an oil manometer, it would give indications of increase or diminution of size according as the blood supply was increased or lessened. Mr. Bradford has kindly enabled me to investigate this point pretty fully. The experiments made upon the kidney were tolerably numerous, and were singularly uniform in their results. The kidney in an animal narcotised with nitrous oxide speedily undergoes contraction, which corresponds of course with the contraction of the renal arteries. This contraction continues as long as the nitrous oxide is given, but as soon as that is cut off and the animal respires air the kidney speedily recovers its normal size, but no dilatation of vessels beyond normal takes place. With this condition we have to compare the behaviour of the kidney in an animal subjected to asphyxia. Here the kidney undergoes a dilatation as soon as air is cut off. This corresponds with dilatation of the renal arteries, and is probably due to increased heart action called into being by the venosity of the blood. Later on, when the heart fails, the kidney suddenly contracts, a very rapid fall in the kidney curve occurring. Thus a singularly striking contrast in the behaviour of the kidney reveals itself according as that viscus is influenced by nitrous oxide or asphyxia. This effect upon the renal circulation must not be taken as militating against the statements made above with regard to the general blood pressure as shown by the carotid artery and about the circulation in the brain and cord. It is well known that certain sedatives—morphine, for example—dilate the vessels in one area while they contract those of other areas.

Passing to the effects produced by nitrous oxide upon respiratory rhythm, I will detain you only a few moments. The chest movement will, as is well known, continue without any air entering if a sufficiently long and small elastic tube be attached to the tracheal canula, so that one can easily compare asphyxia with nitrous oxide narcosis. In the last condition the respirations are at first quickened, but not lessened in depth ; later on they grow slower and deeper, and still later they become very slow and somewhat more shallow ; finally they cease. The time in which this cessation comes about varies considerably in animals. I have not seen the dyspnœic struggles under nitrous oxide which asphyxia brings about. In human beings I have seen, especially in children, complete cessation of respiration without the slightest preliminary struggle. Alike in the lower animals and man the breathing recommences if pressure is made on the chest. These changes in respiration are, I am inclined to think, due wholly to the action of nitrous oxide upon the nerve centres presiding over respiration.

In conclusion, there are various practical considerations which I think may well be taken into review while studying the physiology of nitrous oxide narcosis.

If, as I submit, nitrous oxide acts as a sedative in virtue of its own inherent properties, and does not owe its value as an anæsthetic to asphyxial processes called into play by concurrent privation of oxygen, it should be our aim to push the gas and give free vent to expired gas. We should see that our patient changes as freely as possible his residual air during inspiration, and expires as freely as possible the refuse-laden nitrous oxide which has been stationary within the air-spaces during the last respiration. I cannot but think that, whatever may be the saving of gas brought about by employing supplemental bags wherein the nitrous oxide is collected and re-inspired again and again, the patient suffers by their use from the double evil of breathing diluted and impure nitrous oxide, and further, is not favourably placed for exhaling the refuse of the lungs. I should incline to attribute to this method the cases one occasionally meets with of severe headache, vertigo, dizziness, and other untoward symptoms consecutive upon nitrous oxide inhalation. It is, I believe, a very important point to induce very free inspirations of *pure* nitrous oxide, and to avoid anything like inducing partial asphyxia, and I think in practice this gives the best and the most satisfactory results.

The behaviour of the heart under nitrous oxide should, I take it, encourage us to use this agent freely, and during its administration to watch rather the respiration than the pulse; since it would appear that syncope, if it occurs, occurs secondarily through the lulling to sleep of the respiratory centres. The cases in which nitrous oxide has been said to kill by heart failure are few, and even in these we are not at all sure that the fatal faint was not due to fear or shock incurred by a nervous system already shaken by suffering, and rendered still more obnoxious to shock by an imperfect narcosis. When we remember the period of heightened sensibility which precedes complete restitution of consciousness, we can easily comprehend the terrible jars a debilitated nervous system must sustain if operative procedure be carried on into this stage. Clover long ago pointed out from his vast clinical experience that patients may be allowed to cease breathing, and yet no fear need be entertained, as a few vigorous pressures upon the thoracic parietes will reinitiate respirations. Now we accept his statement, and explain it under physiological laws.

There are other practical points that are suggested by knowledge of the action of nitrous oxide. Of these not the least important is that the erotism called into existence in a fairly large proportion of patients, and controlled only in a few by the restraints of habitual thought and judgment, should render all persons most careful to avoid possible incrimination through hallucination. For the sake alike of patient and operator a witness should always be within earshot or within sight whenever nitrous oxide is administered.

Again, the decided action this anæsthetic has upon the nerve centres, and its tendency to call forth irregular explosions of nervous energy might by some be taken as contra-indicatory to its employment for patients who are the subjects of epileptiform seizures. I do not, however, think we can with justice say that the giving the gas renders a fit more likely to occur than the operation. We are aware any strong excitant will call forth a seizure, whereas the sedative action of the nitrous oxide will, by lessening stimulation from without, be less inclined to provoke the attack.

There is one further remark I would make, and that is concerning the late M. Paul Bert's method of giving nitrous oxide under pressure. I may say that my reason for giving only a passing notice to what must appear to many of you, as a method, in the last degree important. Fully admitting the immense value in theory of Bert's method, I am bound to confess to myself that it at present needs far too much machinery and elaboration for practical work-a-day men like ourselves. Indeed, this view appears to be held even in Paris, where a Fontaine's chamber is accessible: for I hear from a correspondent that no cases of operation have of late been conducted by this method.

In conclusion, I have to thank this Society for its courtesy towards myself. The Odontological Society has done more than any other body to elucidate the action of nitrous oxide, and hence it was but fitting that my research should see the light in that Society, and this has been permitted me through the courtesy of two generations of Secretaries.

THE PREMOLARS IN MAN.*

By Andrew Wilson, L.D.S., Ed.

THE premolars in man are normally two pair in each jaw, and as they have two cusps, more or less decided, they are more frequently called bicuspids.

This latter name is, however, far from definite, as we occasionally, although rarely, have bicuspid central and lateral incisors, and also bicuspid canines, the extra cusp in these being due to an enormous development of the tubercle or prominence in the centre of the cingulum. The forms of the premolars in the upper jaw differ very considerably from those in the lower, and while in the latter the distinction between the first and second is decided, there is little comparatively between the two upper. There being, so far as I am aware, no description of the upper premolars in any of the dental or anatomical works in our language* sufficiently accurate as to enable one to distinguish even the teeth of the two sides, I will, with your permission, begin by endeavouring to give one, taking the first premolars as that best marked. As in all teeth having a grinding surface, we have in the human premolars five surfaces—namely, labial, lingual, mesial, distal, and grinding.

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*A paper read before the Odonto-Chirurgical Society of Scotland.

The labial surface is broadest between the mesial and distal angles of its grinding margin; it tapers somewhat abruptly towards the neck, and its convex longitudinally and still more so transversely. The length from the neck to the mesial angle is much less than that to the distal, and it tapers very abruptly from these angles to the apex of the labial cusp, which is placed decidedly to the *distal* side of the tooth, the slope from the apex to the mesial angle being thus much longer and greater than that to the distal angle.

A well-marked ridge passes upwards from the apex and merges in the general surface about half-way up; so leaving two lateral depressions, that toward the mesial angle being the larger and more pronounced; occasionally it is deeply grooved.

The lingual surface may be said to be composed wholly of the cusp and its base. It is shorter than the labial, but is much more convex, both longitudinally and transversely. It terminates in the lingual cusp, the apex of which lies *close to the mesial* side of the tooth.

The mesial surface is at its grinding margin nearly flat, but a little from that it becomes *concave*, the depression being greatest toward the labial margin and neck.

The distal surface is much larger than the mesial; is convex transversely and still more so longitudinally.

The grinding surface is irregularly quadrate, its labial and distal sides being greater than its lingual and mesial respectively. Its centre is occupied by a deep transverse depression, somewhat crescentic in form, the concavity being towards the labial side. From the apex of the labial cusp a well-marked ridge passes upward, ending abruptly in the depression, and occasionally a much fainter one passes from the lingual cusp.

The mesial and distal sides are bounded by a rounded ridge or parapet, continuous with the lingual cusp, that on the mesial side being usually broken by the transverse depression.

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* A small work in German, "Anatomie des menschlichen Gebesses," by E. Mühlreiter, Leipzig, 1870, gives a very detailed and, judging by the engravings, extremely accurate description of the human teeth.

The peculiarly irregular form of the grinding surface is best seen if a pair be placed with their mesial sides in contact.

There may be either one, two (labial and lingual), or three (two labial, one lingual, as in the Simiadæ) roots, two being the most frequent, three being comparatively rare. The divisions may occur at any part, and the divergence of the roots may be very decided.

When the root is single, both its mesial and distal surfaces are longitudinally grooved, that on the former being the deeper, and there is not unfrequently a slightly marked one on the labial surface.

The pulp cavity in the crown follows the contour of the tooth, having corona corresponding to the cusps. At the neck the canal is much compressed, especially in the middle, becoming so much so in the grooved root of single rooted teeth as to be practically two canals united by a mere fissure.

The description of the second differs in a few points. In it the labial and lingual surfaces are nearly equal, the former is less V shaped, the depressions on each side of the labial ridge are almost obsolete, and the root is more frequently single.

Abnormal forms in these teeth seem rare. I have met with one case in which the first on both sides simulated the first lower, in that the lingual cusp was rudimentary, and was connected with the labial by a well-marked ridge, on each side of which was a slight depression. We have also cases in which the first is a geminated tooth (union with a conoid tooth on its mesial side), three of which I show. I have also met with one case in which a second has assumed the conoidform.*

The second is also very frequently smaller than the first, the difference in some cases being very marked. Both seem to be more liable than other teeth to become more or less rotated during eruption, the second being not unfrequently semi-rotated.

Of the lower premolars we have already very good descriptions; in them, as in all the other teeth (the upper premolars alone excepted), the most prominent point of the convexity of the labial surface is towards the mesial side, to which also the labial cusp points, and their lingual surface is much less convex than the labial, just the reverse of the uppers (this also applies to the molars.)

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* Since writing this paper, I have met with another abnormal form. In it there are on the labial surface, besides the ordinary cusp, two others, one on each side, springing from about the middle of the surface.

They have almost always single roots, but we occasionally meet with some having two, which are labial and lingual, as in the uppers (in the Simiadæ, where two is the normal number, they are mesial and distal, as in the molars.) Abnormal forms seem rarer than even in the upper. I have met with the first, a geminated tooth (two firsts), and also cases in which first and seconds were very much flattened, the mesio-distal diameter being much the largest.

A form of the second, in which the lingual cusp is divided by a notch into two sub-equal cusps, is extremely common.

The extreme convexity longitudinally of the labial surface in the first (the cusp being almost over the centre of the tooth) is much more strongly marked in the anthropoid apes, and I think can be traced to the very peculiar form seen in the macacques and baboons, in which a large surface is opposed to the formidable upper canine.

The premolars present in man are usually given as representing the third and fourth of the typical placental mammalian dentition, but I am much more inclined to regard them as the second and third, for the following reasons:—

In those mammals in which we have the typical number, the first is usually more or less rudimentary in form, and almost, if not quite, invariably has had no deciduous predecessor. It is this tooth which I consider represented in man by the conoid portion of a geminated first.

In the few cases on record of a normally formed supernumerary premolar in the human dental arch, it is to the distal side of the normal second, and in the only case I have met with (lower jaw) that on the one side erupted after the extraction of the first molar, while that on the other side only did so after the removal of both the first and second molars. I am inclined to consider those rudimentary, and almost conoid teeth, which we not unfrequently meet with in the upper jaw, to the buccal side of the normal series, as supernumerary premolars (the fourth typical) we have them between the second premolar and second molar, between the first and second, and even between the second and third. They also occur as conoid teeth geminated with the first molar (on their buccal surface.)

The tendency to dwarfing in the second, and its being occasionally conoid, also point to the same conclusion.

In the platyrrhine monkeys, where three premolars are normally present, the first differs in form from the other two, which are alike, and as they have three molars in their temporary dentition, I regard their successors, the premolars, as the second, third, and fourth of the typical dentition.

I may notice in passing that the teeth generally in these apes are much more human in form that those in the old world monkeys, the anthropoids excepted.

Those members who take a special interest in this subject will have remarked that I have made no reference to the extraordinary case recorded (with illustration) in the Association Journal for March, 1886, in which there are six premolars, all well formed, on the one side, the normal number being on the other. My reason for doing so is that there are so many points in which it is abnormal, and so little is known of its history, that I could not venture to draw any deductions from it.

As regards the number, it is just double of any other case I know of on record. Even when we include the lower mammals, very few cases are recorded of five premolars on one side. Owen figures one in an Indian boar,* another is figured by De Blaineville in one of the long-muzzled canidæ, † and I exhibited another in an Australian dingo to this Society last session, but these are all in species in which four is the normal number, not two, as in man, and the supernumerary is only a duplicature of the first, the most rudimentary of the series, and having a temporary predecessor. In this case none are rudimentary.

As I have already remarked, unfortunately little is known of the history of the case. Nothing in reference either to the number and position of the temporary molars or order of eruption of the premolars and first molar.

Supposing there was no excess of temporary molars and that their arrangement was normal, the germs of the two extra premolars, which are *in* the arch, must have been developed and in possession of the space belonging to the first permanent molar at a very early period—a state of matters which would most likely have involved their eruption in advance of the molar. Again, as there was no abnormality in the lower teeth, one would have liked to learn how these articulated with the upper.

The case is stated to have been complicated by cleft palate, but, judging from the illustration, one would hardly have thought so.

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* Odontography, Plate 141, Fig. 3.

† C. Tomes' Manual, 2nd ed., p. 386.

In conclusion, I will only add that I sincerely trust the time is now past when such a case, or any approaching it, will be allowed by any dental surgeon to lie unrecorded for years, as this one was.

THE FUNCTIONS OF THE TEETH.

By Mr. A. W. Frost.

(Concluded from page 364.)

We next come to the canine, and in considering its uses, and comparing the teeth to those of the lower animals, we again meet with a diminished function and a concomitant diminution of development. The canine is the tooth which, in the lower animals, is variously adapted to the uses of holding, tearing, fighting, and defending, and being situated at the corners of the mouth, by its position it is at once designated as an important tooth. But we have no such uses for our canines; in catching living animals we prefer to use our hands, and our teeth are not recognised weapons of combat; yet, although its uses have been reduced to a minimum, the canine is, nevertheless, a very important tooth. Standing as it does as the keystone of the alveolar arch, giving form and expression to the face, we may well expect to find a stout tooth, yet we may not refer its qualities to a present use, but must rather relegate them to past functions, whose importance is indicated by the late eruption, deep implantation, and survival in old age, when the rest of the masticatory apparatus has gone the way of all flesh. The eruption of the canine does not denote the age of puberty, but it does generally mark the end of the transition state between the temporary and permanent teeth, during which so many children learn to bolt their food without mastication.

Of the bicuspids or premolars I shall have little to say. False molars they are called by name, and false molars they are in function. They are inferior to the true molars, not only in size, but also in functional importance, as is witnessed by their occasional absence, which is said to occur more often with the second than with the first. Their function is referable to their position; occupying a place intermediate with the canine and molars, their sharp cusps assist in tearing food, while their broader crowns help in the trituration which is *par excellence* performed by the molars.

We now come to the six-year-old molars, which must detain us rather longer. First, let us look at the teeth themselves. They strike us at once as being the largest teeth in the jaws. They are larger than the other molars in all their dimensions, their crowns are broader and present a greater grinding surface, their roots are longer and more divergent, their shape is more constant, their cusps are all more marked than those of the second molar, and, in the case of the lower teeth, there are more of them. In the anthropoid apes the rule is that the molars increase in size from before backwards, and in some of the lower races of mankind, such as the Australian blacks and African Negroes and Kaffirs, it cannot be said that they decrease; but it is one of the marked characteristics of the dentition of civilised man that his first molar is the largest, and these facts will tend to make us believe that this tooth has a more important function than the rest of the grinding teeth. And this conclusion is also borne out by the surroundings of the tooth, which we will next look at. It is situated immediately beneath the stout malar process of the superior maxillary bone, which will distribute the shocks of mastication to the lateral walls of the cranium; it is placed very nearly beneath the opening of Steno's duct; it occupies that part of the lower jaw on which the muscles act with the greatest advantage, as evidenced by the fact that if we wish to crack a nut, or hold any heavy weight by our teeth, we naturally endeavour to grasp it between the first molars; also it must not be forgotten that it is usually the first of the permanent set to make its way through the alveoli, and that, whatever defects in number there may be, the six-year-old molar is invariably present, a fact which perhaps may be attributed to the mode of its development, for it is the only one of the permanent teeth whose enamel germ arises *de novo*. (It has been said that the wisdom tooth has a separate enamel germ, but I do not think that as yet it has been definitely proved to be the case.) These facts all point to the conclusion that, from a physiological point of view, the six-year-old molar is the most valuable tooth we possess, although, from a pathological standpoint, it is the most unfortunate member of the series, and gives us, as dentists, almost as much work as the rest of the teeth put together. The first molar question is a very vexed one, and I trust that in the following discussion I may hear it handled by my able friends.

The second molar need not detain us long; it resembles a first molar in all respects, save that in each it is inferior to it. The functions of these two teeth, which are slightly aided by the wisdoms, are the two of mastication and insalivation, and in speaking of these I sufficiently described the *modus operandi.*

Of the wisdom tooth, or third molar, I shall have a very different tale to tell. It is very variable in size, form, position, date of appearance, and is very often quite absent. This variability indicates a loss of function; it is the sign of Nature's disapproval of a useless organ precoursing its disappearance. In the anthropoid apes the wisdom tooth is quite as large as the other molars, generally larger, shows no variability, and comes into position simultaneously with the canine, and in many of the low races of men the same is true; but the higher we get in the scale of civilisation, the more irregularity we find in connection with the wisdom teeth, so that it seems to be a legitimate conclusion that a further modification in the same direction will result in the disappearance of the wisdom tooth altogether. It is, however, a point worthy of notice that the teeth are less often rudimentary in the lower than in the upper jaw, and the lower wisdom very often ranges of equal or sub-equal size, while the upper is quite small. An explanation for this has been suggested in the fact that the lower jaw is not comparable to the upper in the manner of its development. The mandible is to all intents and purposes a long bone, and in great measure grows as such in proportion to the other long bones of the body, whereas, the superior maxillæ depending very much on the "vis a tergo" of the sphenoid, and other bones of the face and cranium, for their development, are apt to suffer in their growth. Examples of this development of the lower maxillæ in proportion to the rest of the body, and the upper maxillæ in accordance with the face, are said to be seen in the jaws of giants, whose lower teeth are often said to bite clean outside the uppers, rendering mastication almost impossible; also in the ordinary cases of contracted palate, in which the lower is seldom affected. This may have something to do with the development of the lower teeth, and especially the wisdoms, which, developed and erupted last of all, are very much dependent upon the scope for their growth.

To the temporary teeth we will now turn. In all essential points they resemble the permanent organs, differing from them only in that they are less substantial both as regards size and quality; but they have, nevertheless, functions as important and as necessary as those of their successors. There are some who are too apt to extract the milk teeth at the least sign of trouble presenting itself, on the pretext that they are only temporary, and that others will soon replace them. By such extractions at an early age irreparable mischief is often done, for we know that the alveoli are entirely subservient to the position of the teeth, and if the space close up from behind—as is often the case after extraction, say, of two first temporary molars—there are eight teeth left occupying the space for which ten permanent teeth are in process of development. Hence, if we can avoid it, we never extract the deciduous teeth before their time of replacement, recognising their use in keeping the jaws of a size that shall be suited to their successors. But the milk teeth were not given us just to keep the places ready for the permanent, or to keep dentists employed. Teeth are meant to be used, else we should not have them, and all children use their teeth instinctively. As soon as a child has teeth he gives up sucking for biting, and will for ever be worrying at something. If he has not the usual indiarubber ring, he will make use of his clothes, or if they are not available, he will go for the hearthrug, or failing that he will dig his newly acquired organs into the side of the table, or the leg of a chair, or the first thing handy. And as he grows older this habit is none the less marked; the articles to which school children put their teeth are, as we know by experience, very diverse. And, from a physiological point of view, it is well that it should be so; to use his teeth he has to use his muscles : increased muscular activity entails increased metabolism, increased metabolism necessitates an increased supply of blood, whence the tissues may extract their pabulum; the arteries widen, and through the dilated vessels blood pours out not only to the muscles, but also to the bones. So the functional activity of the muscles profits in the after period of rest, not only themselves, but the bones also; and in the bones lie the developing teeth, and, *ceteris paribus*, a richer supply of blood must proportionately improve the teeth in quality and quantity. Among the lower races of mankind—that is, among those who exercise their natural functions by putting their temporary teeth to more natural uses than civilised nations do—we find far fewer cases of irregularity in the teeth and jaws, a fact which

I think few of us will hesitate to attribute in great part to the above physiological reason.

In speaking of the functional influences that affect the teeth during their development, and, consequently, their after uses, there is another very interesting subject to which I should like to allude. It has been mooted that the early age to which children are sent to school, and made to use their mental faculties, materially influences the size and functional uses of the masticatory mechanism. It is argued that the increased activity of the brain draws off the blood supply very largely into the internal carotid artery, by this means lessening the flow in the external carotid and its branches, which supply the muscles and bones of the face; since it follows that if the same amount of blood pass along the common carotid, and the internal carotid or its branches dilate, the stream flowing through the external carotid must be proportionately diminished. This may be an influence exercised over a few cases, and I believe only a few; for, as I have before said, I think that most children have a natural aptitude for using their teeth; and, when held in durance vile in the schoolroom, the generality of youngsters manage to keep the balance even between the two carotids by exercising their muscles of mastication on the ends of their pencils, their nails, or their fingers, while engaged in mental difficulties; and out of school hours, the most diligent have an inherent desire to stick their teeth into something, although such material as they select is not always calculated to preserve their dental apparatus. But, in addition to this, be it remembered that by the age of six the masticating surfaces of all the teeth, except the third molars, are formed; and, consequently, if any parts suffer, it will be the roots of the teeth and the bones. Yet we must, I think, admit that the last two molars may be powerfully influenced by the respective blood supply of the face and brain, and that, in consequence of a retarded development of the jaws, irregularity of the teeth is occasionally to be referred to this cause.

In concluding these few observations on the teeth and their functions, there are a few general observations that I should make concerning them collectively. Physiological research has proved that little or no chemical action goes on in the mouth. Physiologists do not say that no digestive processes go on in the mouth, they only say that the food suffers little or no chemical change; but the mechanical differences of the food entering the mouth and that leaving it by the fauces are very marked, as I am sure every one will admit. Yet, with the spread of knowledge brought about by popularising science, an idea has sprung up that since only physical and no chemical actions occur during mastication, therefore, "mastication is the thief of time." We must impress upon our patients that, although the changes that take place in the oral cavity are only mechanical, they are nevertheless essential. The food must be prepared for deglutition, and till it is prepared it cannot be swallowed. If we cook our food in a manner that renders it easy of mastication and deglutition (and, for my part, I should be very sorry to find my meals otherwise), it is our organs of mastication that lose their use, digestion does not suffer. But such articles of diet as bread and meat must be well insalivated in the one case and masticated in the other, to facilitate digestion, and we cannot do the one without doing the other also. The necessity of this is very obvious, but the question arises as to how far civilisation has dispensed with these functions, and whether the processes of cooking have not been carried so far as to render it undesirable that the food be masticated before its introduction into the stomach, since the highly prepared form is already too suitable for digestion, and would profit by a little retarding. I think that there is a good deal of reason in their views if they are not carried too far, for observation shows us that, however easy of digestion food may be, it always profits by its stay in the mouth, whose functions may not be entirely artificially replaced satisfactorily. Cases are on record of œsophageal stricture in which patients have been kept alive by food introduced through a gastric fistula, and it has been remarked that the food agreed better with the patient—that is, digestion proceeded better—when the food was first masticated and then put into a tube in connection with the stomach. But there is no need to cite such extreme cases as these to show that the culinary art has not yet supplanted the dental functions. The dyspepsia, so common among people who either do not or cannot masticate, and consequently insalivate their food, tells us this, assuring us of the fact, that although Nature has given us so modest a set of teeth as compared with the size of our bodies, yet she does not intend them to be wholly disregarded with impunity; on the contrary, by the healthful influence of functional activity, she endows useful members with greater powers of endurance and superior development of their surroundings.

In conclusion, I would only repeat the oft-reiterated advice: the more we use our teeth, the better for us and the better for them.

A NEW HYDRAULIC MOTOR FOR THE DENTAL ENGINE.*

BY MR. WALTER CAMPBELL.

It is now thirteen years since I had the pleasure of bringing the dental engine before this Society. This engine does not now require commendation—it is in the surgery of every dentist worthy of the name. At the Society's meeting I have referred to, held in March, 1874, I then said, in reference to the usefulness of the dental engine—"All that is now wanting, is the adaptation of water as a motor power, to make this the most useful mechanical appliance ever given to the dental profession." Since then, I have been constantly on the outlook for a suitable motor to drive the dental engine. At one time, I had great hopes of the turbine water motor, but I soon found it was not at all suitable for our purpose. It is admirable where a steady speed is required, and when it is not necessary to be frequently stopped. For intermittent work it is not suited, on account of the time required to get up its speed, and also the time required to stop it. For variable work it is not suitable. Either at greater or less speed than it is calculated, it wastes water. For high pressures and small powers, it has to be made so small, and the speed has to be driven so great, that it is almost impossible to make it satisfactory for our work, which is both intermittent and variable.

Some years ago, I availed myself of the electric motor to drive my engine, but it was not a success; it was, in my hands, unreliable, and required more attention than I cared to give it. Had I been an electrician, I might have had the electric motor more under my control, and the humming noise of the dynamo was, besides, objectionable. I am not the only one who has tried the electric motor and discarded it.

I have enquired as to the merits of the gas and hot-air engines, with the view of ascertaining whether one or other could be made small enough, and be suitable for our work, and the result of these enquiries has not been encouraging. Neither the gas nor the hot-air engine is very suitable for intermittent work, on account of the difficulty of starting; the heat, smell, and noise, though minor, are also drawbacks to their use in practice.

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* A paper read before the Odonto-Chirurgical Society of Scotland.

At every Exhibition I have visited, machinery has always an attraction for me, and it was at the Exhibition held in this city last year, that I first saw the hydraulic engine, which I have the pleasure of bringing before you to-day. On seeing it at work, it at once occurred to me that it could be made available for our purposes. Accordingly, I ordered one from the inventor, Mr. Hastie, of Greenock, and after a good deal of planning and perseverance on my part, I think I have at last succeeded in making this motor all that can be desired for dental work. I have no hesitation in saying that, with the new joint in the upright shaft, and other new arrangements in the dental engine, we have the most perfect combination of motor and dental engine of which I am aware. This joint in the upright shaft is the most valuable all-round movement, and gives an increased length (when required) of seven inches to the flexible arm. With this additional range of movement, I do not now see anything further to be desired. The only difference of opinion which might arise—as Mr. Brownlie, who came to Dundee to see it at work, remarked—would be, as to the position for fixing the upright shaft. I have the upright shaft of my engine fixed at the left side of the chair (Morrison), about one inch from the left claw (or foot). Before finally fixing it here, I tried different positions with the ordinary foot-treadle, but found this the most satisfactory. I had the engine fixed in its present position, before I had thought of the new joint. I found it, however, in consequence of the fixed position, occasionally inconvenient. But since I have got this joint, as you now see it (and it has passed through several stages of development) the hand-piece can be brought to any position.

This hydraulic engine, as you will see from the diagrams, is worked by two oscillating cylinders, and is specially suited for high pressures and intermittent work. Up to a certain limit, it can go at any speed, and it can be started or stopped almost instantaneously. It can be adapted to any pressure by using a counter-shaft to suit the position and adapting the patent adjustable stroke, which is a feature in Mr. Hastie's engine. In this way, the consumption of water is exactly in proportion to the work done.

Where conservative dentistry is practised, a motor for the dental engine will become—indeed, has already become—as great a necessity as the engine itself. I have been working my engine with motor for more than three months, except when making any alterations on the new joint, and then I felt the want of it.

The advantages of a suitable motor for the dental engine were well expressed in a paper read by Dr. Teague "On Personal Hygiene," at a meeting of the Southern Dental Association, America, and reported in the *Cosmos* for October last.

I will read one or two extracts from this paper, and from the discussion which followed :—

"Prophylactic measures should be employed to ward off ailments—arm rests, to support the uplifted arm, and prevent nervous tension and overwork of the heart ; operating stools, to secure a sitting posture whenever possible, thus avoiding bending of the body and hanging of the head, from which deleterious habits result : lung troubles, intercostal neuralgia, and vertigo ; to say nothing of hæmorrhoids and varicose veins, which result from habitual standing."

"The dental engine should be worked by some power other than the foot, otherwise, one leg is in time rendered almost powerless by non-exertion, and the other is injured by overwork.' '

Dr. Winkler thought the essayist might have said more on the subject of motors. Water power is not reliable everywhere, and electricity, while very delightful when efficient, is very troublesome to keep up. The best motor, after all, was a big strapping negro.

Dr. Hall Moore said—"For six years I have used the Babcock motor, and the relief it gives is worth ten times the cost every year. But any motor that takes the place of foot power for the dental engine, will add from five to ten years to a dentist's life."

Dr. E. S. Chisholm has also used the "coloured motor," but not with satisfaction.

Dr. Rembert uses a male motor.

Dr. George Chisholm uses a young man for a motor, and so on.

I fully endorse all that these gentlemen have said, as to the desirability of sitting as much as possible when at work. It is many years since I acquired the habit of sitting while operating, especially when filling ; and with the motor, preparations of cavities may also be done with great ease sitting.

I have the knob, for regulating the movements of the engine, where the toe of my right foot would naturally rest —viz., in a line between the two feet of the chair, on the right side, and eight inches behind the front foot. These diagrams will give you an idea of the relative position of the several parts.

In showing you the different parts, I regret my inability to show them working. I can only add, with reference to its efficiency, that although it looks like a toy, I have more power than I require, and that it is under perfect control, going fast or slow, starting or stopping in an instant, and *always ready*.

The original cost is not great, and the cost of running the engine a mere trifle. The Water Company fitted a meter to my engine, and left it there for three months, to ascertain how much water it was likely to use. At the end of the three months, the index registered something less than two thousand gallons. The meter is now removed, and I am to be charged twenty-one shillings a year.

A gentleman in this town has the same engine fitted up to drive a small turning lathe, and is to be charged at the same rate. This may be a guide for any Water Company as to the charge for water, to drive this small engine for dental purposes.

ON THE ADMINISTRATION OF NITROUS OXIDE UNDER PRESSURE (METHOD OF M. PAUL BERT).*

BY DR. E. GOETY.

As an introduction to the subject proper, I will, with your permission, give briefly a few details connected with the introduction of N_2O as an anæsthetic.

The first experiments with the gas were made by Humphry Davy, in 1799, and their results were published by him in a work entitled "Researches Chemical and Philosophical, chiefly concerning Nitrous Oxide and its Respiration." He found that subjects who had breathed a small quantity of the gas in a pure state, experienced a sensation of extraordinary gaiety. It was this property which gave it the name of laughing gas. Davy saw further that N^2O was unfit to support life, for under its influence all pain disappeared. These discoveries, one may be sure, were the cause of much discussion, and no sooner were they made known than Orfila Vauguilin and Strenard made researches on their side, and declared that N_2O was a dangerous gas capable of producing in those who inhaled it suffocation and asphyxia, and in consequence the idea of its use ought to be rejected. This opinion of these chemists caused the new gas to fall into oblivion, and for many years it was only spoken of as a scientific curiosity.

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* Paper Read before the Birmingham Dental Students' Society. Being in part a translation of a paper read before the Geneva Medical Society.

In 1844 an American dentist, Horace Wells, attended an amusing course of lectures on chemistry, in which an assistant was submitted to inhalations of N_2O. When under its influence he was severely shaken, and struck several times on the legs and arms. On returning to consciousness, he declared he had felt nothing. The following day Wells asked the professor to administer to him the gas for the extraction of a tooth; the result was most satisfactory, a large molar was removed without the least pain. He afterwards essayed to produce anæsthesia by the same method in several of his patients, with perfect success. He then went to Boston to make his discovery known, there operating before a reunion of professors and a large audience. Unfortunately there fell into his hands a refractory subject. At the moment of the extraction the patient began to cry out and call for help. The result of the operation proved such a disappointment to Wells, that although further experience showed the value of his discovery, his reason was affected, and he shortly afterwards committed suicide.

From these experiments came its use as an anæsthetic. We have seen that N_2O produces an insensibility of only a few seconds, for consciousness begins to return as soon as the patient ceases to breathe the gas, and if the administration be continued asphyxia follows. Notwithstanding this difficulty, several surgeons attempted operations of longer duration, and a case is given in which *ovariotomy* was performed under the gas. As soon as asphyxia appeared, the surgeon operated; at the end of a short time sensibility appeared. Then the inhalations were repeated, and in this way continuing for an hour and a half. Such operations as these could not be called successful, and therefore it was employed only by dentists for the extraction of teeth, until Paul Bert, in

1878, made to the "Academie des Sciences" a communication which showed the possibility of obtaining an insensibility of longer duration. I must ask your indulgence still further; for, before broaching the history of this important discovery, it would only be wise to have in our minds some of the properties of the gas.

It has neither colour nor odour; is of a sweet taste, soluble in water, and is liquifiable at a high pressure. It is prepared by decomposing by heat ammonium nitrate.

If venous blood be beaten up with N_2O no change of colour takes place. It has, therefore, no action on the blood corpuscles. Introduced into the organism by inhalation, it merely dissolves itself in the blood plasma, and herein is the cause of the rapidity of its action, and the promptitude with which the patient comes to himself as soon as he ceases to inhale it, for it is eliminated very quickly by the lungs. This property renders its mode of action very different from ether or chloroform, which are dissolved in the fatty matters of the organs, notably in the blood and nerve centres, and in consequence are eliminated very slowly.

Not only in animal life is N_2O unable to support life. It has been proved that grains of barley placed under conditions of heat and moisture would not germinate in an atmosphere of the gas in a pure state. As soon, however, as oxygen was added in a small quantity, germination took place, but much slower than in free air. Another experiment proved that the same grains, when placed in a mixture of NO_2 and O_2, germinate much more quickly under a greater than ordinary pressure. This result is a proof in favour of Bert's theory. I will now pass on to the discussion of the theory itself.

Being given a gas producing anæsthesia, but which does not sustain life, put into it a quantity of oxygen sufficient for respiration without taking away its properties. This problem has been solved in the happiest manner by Paul Bert, and his discovery permits the gas to be regarded as the best of the anæsthetics. Observe by what reasoning he has been brought to introduce augmentation of pressure, so that the gas can be breathed without danger.

I will give, as near as possible, his own words:—

"Experience has shown me," he says, "that when an animal breathes N_2O, as soon as insensibility comes, a hundred volumes of arterial blood contain 45 volumes of the gas. If, then, 45 volumes of the gas are administered, anæsthesia will certainly be the result. On the other hand, if a bag contains the gas at ordinary pressure, the tension will be 100, but if it be subject to the pressure of the two atmospheres, the tension of the gas will be 200. Again, if the bag, instead of containing 100 volumes, contains only 50, the tension of these 50, under the augmented pressure, will be equal to 100 ; that is to say, a sufficient quantity to cause anæsthesia. The other 50 volumes could be occupied by another gas capable of sustaining life, namely, oxygen. It will, therefore, be easy to perform operations of longer duration. The problem is then solved ; thanks to the augmented pressure it is possible to bring about (at a tension of 100, a mixture of N_2O and O_2) anæsthesia without asphyxiation. For this it will be necessary to place operator, patient and gas under pressure in an iron-room or bell similar to the apparatus used in the vapour bath establishments."

The figures given are merely for the sake of calculation. Experiment has proved to the discoverer that the mixture should really be 15 per cent. of O_2 and 85 per cent. of N_2O, under a pressure of a quarter of an atmosphere. The points of the theory have been entirely verified by the facts.

Numerous experiments made on dogs have shown that anæsthesia could be easily obtained, and sustained for a considerable time. The animals made no resistance in taking the gas, and when under its influence gave no sign of feeling, although subjected to most severe tests. The restoration to consciousness was quick and perfect. The application of the new method for the purpose of operations has been made by several surgeons on the continent. But the method of Paul Bert is little known, for the difficulties of the installation of the apparatus are, unhappily, an obstacle to its general use.

Mr. Roussy, a dentist of Geneva, to whom I was so fortunate to act as assistant for some months, had established at his rooms a complete apparatus, which enabled him to administer the gas under pressure. It consisted of a large round bell made of boiler iron, well lighted by seven small windows fitted with thick glass, closed by an iron door, which shut on ledges of rubber, making the occlusion absolutely hermetic. Four persons could be accommodated inside. There was also an operating chair, a table, under which stood the bag capable of containing a large quantity of the mixed gas sufficient for an anæsthesia of about 15 minutes. There were also all the instruments, etc., necessary.

The compression of air was brought about by a 2-horse power hydraulic motor placed in the basement. This machine worked an air-pump. In order to save time, an iron reservoir was kept filled, and with the 7 minutes was sufficient to bring the pressure to the necessary point.

The first 20 administrations were made with the mixture indicated by Bert, namely, 15 O_2 and 85 N_2O. Later the proportion has been 12 O_2 and 88 N_2O. The result with this mixture was found in some respects to be better.

With this description it will be easy to understand the mode of procedure. The patient and operator, accompanied by an assistant, enter the bell. The door is closed; the signal is given to the engineer to commence pumping. It is then that the only inconvenience is felt due to the pressure on the drum of the ear. This, however, rapidly disappears, after making several movements of swallowing causing equalisation of pressure by passage up the Eustachian tube.

Under the pressure simply, the pulse shows no notable difference.

In about 7 or 8 minutes, the tension is raised, and then the administration commences. In from 10 to 15 inspirations, and in some cases 6 to 8, anæsthesia is complete, without change of colour in the skin or in the mucous membrane, without alterations of respiratory rhythm. The conjunctiva is insensible, the pupils slightly dilated, the muscles of the jaw alone remain contracted.

No haste in operating is necessary, once anæsthesia takes place. There is from a minute to a minute and a quarter absolute insensibility. If a longer time is required, the face-piece can be replaced and a second inhalation be given without danger. The restoration to consciousness is quick and without ill effects.

The method has been applied to ordinary surgery, and two eminent French surgeons have, since 1879, performed grave operations under it, such as amputations, removal of tumours, etc., with great success.

To enumerate: The advantages of Paul Bert's method are—

1. Length of time allowed to the operator.
2. Absence of ill effects, such as vomiting, and the depression accompanying ether or chloroform.
3. Absence of danger, for under the augmented pressure it is impossible for the patient to absorb too much gas.

These advantages, I think, fairly entitle N^2O to be classed as the best anæsthetic.

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DENTAL PRACTITIONERS AND THE MEDICAL REGISTER.

In our last issue we published an announcement, emanating from Mr. Millar, Registrar to the General Medical Council, to the effect that no one will be allowed after June 1, 1887, to register a single medical qualification. Putting aside the question whether or no it is advisable for dentists to take medical diplomas, there can be very little doubt that this outcome of last year's Act affects a very large number of practitioners, and affects them injuriously. For many reasons our students and practitioners have voluntarily imposed upon themselves the strain and exertion necessary for obtaining a further diploma after the L.D.S. has been achieved; our hospital surgeons, at the Dental Hospitals and dental departments of general hospitals, have usually felt it incumbent upon them to hold a medical diploma, and to place themselves upon the Medical Register. Thus, there are many of our most respected members who are M.R.C.S., L.D.S.; but, by the enactment cited above, no dentist will in future be permitted to register unless he has passed the conjoint board, and is M.R.C.S., L.R.C.P., L.D.S., or has taken a University degree equivalent to the conjoint examination. This is a manifest hardship. To many men the attainment of a surgical diploma is a matter of possibility, and so long as he could register such a qualification it was a matter of advantage; but few men have the time or means to study the wide range of subjects embraced by the scheme of the conjoint board. So it happens he must either simply take his surgical qualification as an empty fringe of ornament, while he is excluded from all legal participation with medical men, or he must spend a small lifetime to cram up enough crude medicine, midwifery, and the collaterals of which the name is legion, and place himself under the not very clear or convenient regulations of the conjoined examination, before registration. Of the results of this mischievous arrangement no one can, of course, at present speak with any degree of certainty; but it must inevitably impel dentists to a specialism of the worst order—namely, an enforced devotion of their time, energies, and attention to a branch of the healing art, before they have gained an adequate insight into the subject as a whole. It is too late in the day to urge that students or practitioners who desire a knowledge of general surgery, will work at its acquisition, whether or not they obtain a further registrable qualification; men do not, in the present day, content themselves with the pure draughts of unselfish learning; they live at too high pressure, they experience too severely the pinch of bread-winning in an over-stocked and over-populated country to be satisfied with chewing the cud of unproductive industry. Unless our students see pretty distinctly that material benefit will accrue from material toil and inconvenience, they will never attempt the ambitious flights essayed by their parents. It is further deplorable that this consummation of unreason, apparently dictated by a spirit of "boycottism," should compel the ambitious into attempting the double qualification of the conjoint board, inasmuch as it will cause a vast expenditure of useful energy and time upon extra-dental work, and so leave those who would pose as leaders of learning, among the ranks of the inepts who, surfeited with book lore, are untaught of experience. There must be many men who will, through favourable circumstances, take the double qualification in their stride, but these are the exceptions; to the majority, such an acquisition will be only obtained at the expense of more useful knowledge learnt in the operating and stopping rooms.

It often happens that some of our best men are unable to prolong their student's career, but are able, by diligence and self-denial, to acquire enough knowledge of the general profession of surgery to pass the M.R.C.S. Upon such men the new regulation inflicts a considerable hardship, practically debars them from registering, as they cannot take up the additional subjects imposed by the conjoint examination, and eventually throws them into a back seat, while more moneyed and often less talented men, who have taken the L.R.C.P. and M.R.C.S., and know, perhaps, less dentistry, assume a position in front of them. Not only is this a hardship to the men themselves, but it is distinctly detrimental to the very best interests and traditions of the dental world in general. It would be idle to speculate upon how many men would prefer the showy D.D.S. to a surgical diploma obtained in England, when neither will admit of registration upon the Medical Register; at least, it would be safe to affirm that the measure in question will give a very rude shock to English licensing bodies, by practically withdrawing from them the fees and support of the dental profession, while it will enhance in a most undesirable way the *facilis decensus Averni* which leads to a foreign D.D.S. There is little doubt that, as things stand at present, the Act of 1886 inflicts great hardships upon dentists, and it is difficult to believe that these will be allowed, or the matter to go unchallenged. At the same time, the present crisis seems to offer a favourable opportunity for agitating for an alteration in the conjoint scheme which would admit dentists to the examination under a modified curriculum. Were such a course adopted, it would be easy to frame a curriculum, from which would be excluded some clinical medicine, midwifery, and perhaps certain collateral subjects, and to interpose the dental subjects now required for the L.D.S. Were this done, and were the holders of such a composite diploma permitted to register upon the Dental and Medical Registers, the present deadlock and glaring injustice would be obviated, and a far more desirable consummation arrived at than has at present been attained. One thing is certain, and that is, that the *status quo* is utterly wrong in ethics and common sense, and the sooner it is changed, the better for all parties concerned.

THE EXAMINATION FOR THE L.D.S.—The next Examination for the L.D.S., Eng., will be held in the middle of June, and probably at the Examination Hall, Victoria Embankment. Schedules must be sent to F. G. Hallett, Esq.

LANGMORE DEFENCE FUND.—It is with very much regret that we hear that Dr. J. W. Langmore, formerly acting editor of our contemporary, the *Journal of the British Dental Association*, has been made defendant in a charge of conspiring to obtain illegal detention of a person in an asylum. The person was certified as being lunatic, and Dr. Langmore gains the day; but unfortunately, as the plaintiff is a man, or rather, a woman, of straw, the doctor is called upon to pay the piper, and to the tune of over £240. Thus an innocent man, besides the anxiety and worry of defending so iniquitous an action, has to defray the ex'es. Who wouldn't rejoice and be glad that they live in a law-ruled country!

CARIES IN THE MASTODON.—Professor Leidy, in the *Proceedings Academy of Natural Sciences, of Philadelphia*, directed attention to a specimen consisting of the posterior portion of a last upper molar tooth of the mastodon, which he had attributed to a species under the name of *M. floridanus.* It is remarkable from the circumstance that it apparently exhibits the result of caries, a condition of which he had never previously observed an instance in extinct animals. The supposed caries appears as an irregular excavation immediately above the crown of the tooth, about four lines in depth. The mouth of the cavity is elliptical, extending one and one-fourth inches transversely and one-fourth of an inch vertically. The surface of the cavity appears irregularly eroded.

INSTRUMENT FOR ENLARGING THE HOLES IN ARTIFICIAL TEETH.—Mr. W. H. Rollins, writing in the *Cosmos*, says: I frequently find it convenient to alter the shape of the holes in pivot and other porcelain teeth. At first I used a piece of copper wire with emery-powder, getting the idea from the glass-cutters. Now, however, I find that the time required can be reduced to one-third by using a piece of hardened steel of an oval, square, or half-round shape, made to revolve rapidly in one of the S. S. White office lathes, and kept covered with coarse corundum moistened with glycerine. To show how rapidly this will cut, it is only necessary to say that a common Bonwill crown can have the hole enlarged enough to admit of two pins as for a bicuspid in ten minutes.

HERBST'S METHOD WITH THE RUBBER DAM.—Dr. Herbst uses no clamps for retaining the rubber dam, except on the third molars, thus, he takes an ordinary pin and clips the point a little, curves the entire length, and flattens it slightly also, and introduces it at the necks of the teeth, and in this manner catches the rubber on the two ends simply for holding until he secures it, then confines it by ligature, and removes the pin, reducing the discomforts to a minimum.

ANTISEPTIC MOUTH-WASH.—One of the greatest living authorities upon buccal bacteriology, Dr. Miller, finds that, by using the following mixture, he could completely sterilise the mouth, cavities in carious teeth, &c.: Thymol, 4 grains; benzoic acid, 45 grains; tincture of eucalyptus, 3½ fluid drachms; water, 25 fluid ounces. The mouth is to be well rinsed with this mixture, especially just before going to bed, since most of the damage by fermentative and putrefactive processes in the mouth is done at night, during sleep, unless the exciting cause be previously removed or rendered inert.

GUM CHEWING AS A MEANS OF NUTRITION.—A medical contemporary in America insists that gum, when constantly chewed, increases very considerably the body weight. It is suggested that a gum-quid should with advantage replace the tobacco equivalent loved of nautical men.

'TIS TRUE, AND PITY 'TIS 'TIS TRUE.—The shining metallic incrustation found upon the teeth of some of the cattle which are pastured along the banks of the Carson river, has been popularly pronounced to be a coating of gold and silver deposited upon the teeth from the impregnation of the water and grass, attracted through the magnetic action of the animal's body. Some of this bullion incrustation or deposit was submitted to the chief assayer at the Consolidated California and Virginia assay office. Upon critical analysis of the material he pronounces it to be pure calcium sulphide, with not the least trace of either gold, silver or quicksilver. Thus another hopeful delusion is dispelled, and the contemplated source of revenue from scraping the animal's teeth periodically rendered useless and worthless, and a gentle melancholy broods over many a home where buoyant hope was wont to dwell!

CLEFT PALATE IN A CALF.—Mr. Humphreys, at a recent meeting of the Central Counties Branch of the British Dental Association, exhibited a case of cleft palate in a calf five days old, the cleft extending from the intermaxillary bone backwards, the two halves of the lower jaw were separated, the tongue bifurcated, and an additional incisor tooth with no bony attachment was present on the left half of the jaw.

ORGANISATION OF INDIA RUBBER.—Close upon the experiments with sponge-grafting in the closure of wounds, we have the announcement by Professor Van Lair, of Liège, before the Academy of Medicine, of the curious fact that a tube of India rubber, placed between the two ends of a cut nerve, becomes vascularised, the nerve-fibres are prolonged into it, and finally the two ends of the nerve unite, and the caoutchouc disappears. We have the above curious fact upon the authority of the *Dental Advertiser.*

THE RECENT CHANGES AT THE LONDON DENTAL HOSPITAL.—Mr. Arthur Underwood, one of the lecturers at the London School of Dental Surgery, has resigned his post of Surgeon to the Hospital, and the vacancy thus made is filled by the promotion of Mr. Claude Rogers, lately Assistant

Surgeon to the same institution. The elevation of Mr. Rogers creates a fresh vacancy on the junior staff, and we find an assistant surgeon is now being advertised for. We hope, on the present occasion, the Committee of Management may see their way to giving due prominence to the claims of such candidates as hold surgical diplomas. It is, undoubtedly, true that the eyes of the whole profession are focussed for this, the Central School of English Dentistry, and, unless some practical acknowledgment is made of the claims of those who have aspired to surgical diplomas, our students will soon learn to estimate them lightly. Upon the occasion of the last election, Mr. Matheson, although only an L.D.S., had passed so brilliant a career and gained such credit as a lecturer at Owen's College as to render his claims unassailable, but we repeat we trust on this present occasion the management will return to the usual course, and select only candidates who are surgically qualified, besides holding the L.D.S. of England.

LECTURES ON DENTAL SUBJECTS FOR POPULAR AUDIENCES.—We are pleased to announce that we shall be able to place Mr. Moxon's Lecture in our readers' hands in our next issue. It has been already indicated how important such lectures are, and how useful.

Abstracts of British & Foreign Journals.

MEDICAL BULLETIN.

REMARKABLE CASE OF TICDOLOREAUX, OR NEURALGIA OF THE SECOND BRANCH OF FIFTH NERVE.*

By JAMES E. GARRETSON, M.D., *Professor of Oral Surgery and of Clinical Surgery.*

THE symptoms first appeared in the spring of 1868. The patient was a married man, *æt.* 66, of temperate habits. He had been a shoemaker, afterwards a rectifier. During the early part of his life he suffered severely from indigestion and hepatic derangement. The first attack of neuralgia was in 1868, slight attacks of pain being felt about the right cheek and orbit when he washed his face in cold water. These pains gradually increased, and he was unable to eat, drink, converse, or laugh without a severe paroxysm. After suffering acutely for six months, the pains gradually subsided ; the relief was only temporary, the pains subsequently returned with renewed violence, causing excruciating agony. The trouble also was more extended, involving the lip and nose, A mouthful of water, a current of air, or a touch on the affected side of the face, aggravated the suffering. He was operated on in June, 1871, when it was believed a portion of the nerve, two and a half inches in length, was removed from the infra-orbital canal, and excised in the spheno-maxillary fossa. This operation, the patient stated, gave him relief for about one year, when the pains commenced as before, at first slight, but gradually increasing, until he was brought to the above clinic in a state of great prostration, requesting another operation; exsection of the nerve at the foramen rotundum was performed. After etherising the patient, an incision in the median line of the upper lip, continued upwards to the lower edge of the orbit, thence outward to a point over the prominence of the malar bone, released a triangular flap and exposed the anterior face of the antrum, the arteries involved being ligatured as required. Close to the wing of the nose some abnormal tissue, in which nerve filaments were interlaced, was noticed. The tissue around the infra-orbital foramen was also in the same condition, the main trunk of the nerve, which finds its exit at that point, being apparently divided and broken up into small fibres. The anterior wall of the sinus was next removed by means of a large burr, revolved by the surgical engine, examination of the cavity showing it to be in a perfectly normal condition. A succeeding step was to scrape a line upon the antral roof, on the line of the infra-orbital canal, and with a burr ream out the floor, exposing the main trunk of the nerve in its normal position, having apparently never been previously removed. The portion of the wall of the antrum next to the foramen rotundum was next cut away with the burr, giving access to the spheno-maxillary fossa. The nerve being held by a pair of bull-dog forceps, a small fenestrated instrument encircling it was passed into the fossa and the foramen rotundum located, at which point the nerve was excised by means of a fine, long-handled bistoury, the blade being half-an-inch long, and at an obtuse angle with the shank of the instrument.

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* Delivered at the Medico-Chirurgical College Hospital, Philadelphia.

Succeeding treatment was to inject the parts with dilute phénol sodique, and pack two small sponges into the cavity as tents, stout cords being attached to permit of their ultimate removal. The incision at the lip was next approximated and held in position by means of pins and figure-of-eight ligatures, the remaining part of the wound on the face was united by interrupted sutures. At either side of the incision in the lip was placed a small compress, held in position by adhesive plaster, bringing the inner part of the cut surfaces in contact. A bandage around the head, giving support to the parts, completed the dressing. The patient made a speedy recovery, and had no return of his pain.

SOUTHERN DENTAL JOURNAL.

A CASE IN PRACTICE.

By Pitt S. Turner.

In the early part of last July, Mrs. T——, æt. 26 years, called. Two or three teeth were filled—all that were decayed or showed any signs of decay at the time. She left in a few days, and went to another part of the State on a visit to her father, who is an eminent physician. She remained away until about the first of October. Soon after her return, her husband called to make an appointment for her, stating that there was a cavity which had been overlooked. When she called, the superior right molar, front approximal surface, and a large part of the crown, were completely broken down; also the adjoining bicuspid greatly involved, which yielded under the instrument like chalk. The same teeth on the left side were in the same condition, but in a less degree, and the enamel had not broken away. It did not seem to be caries, but a dissolving or disintegration, white in colour, of both enamel and dentine. In reply to questions as to what she had been taking, she said her father made her a very *strong* tonic, composed of tincture of iron, arsenic, strychnine, and one or two other ingredients, the names of which she had forgotten. The saliva was found to be extremely acid, that from the parotid glands, of which there was an abundant flow, was much more acid than that from the sub-maxillary and sublingual glands. The tonic was ordered to be discontinued, and one prescribed to bring about an alkaline condition.

He asks, can dentists save the teeth of the people as long as physicians give strong medicines which destroy them in this manner ?

DENTAL ADVERTISER.

THE PHYSICAL PROPERTIES OF VULCANITE.

By Dr. George B. Snow, Buffalo, N.Y.

Vulcanite is crude India rubber, mixed with about half its weight of finely divided sulphur and submitted to a sufficiently high temperature, under pressure.

The unvulcanised mixture of India rubber and sulphur is a soft, somewhat elastic substance, of a greyish colour. Vermillion or other pigments are often added to the mixture to colour the vulcanised product.

The unvulcanised gum becomes hard and inelastic below 32 deg. Fahr. ; and remains so till subjected to a temperature of about 100 deg. A strip of India rubber forcibly stretched has a slightly increased temperature, and when allowed to contract, the temperature is lowered. If a weight be suspended to a strip of India rubber, so as to stretch it, and the strip be warmed, it will contract lineally. It does not, however, contract in bulk by the application of heat, as this would seem to indicate, as it expands laterally ; so that its bulk is greater when warm than cold.

The expansion of vulcanite is given as .0000467 of its length for each degree between 77 deg. and 96 deg. Fahr. The rate is somewhat less for temperatures below 77 deg. The expansion of iron being taken as 1, that of brass will be 1.67, for the temperatures given above.

The elasticity of India rubber is not caused by its compressibility, so much as to a mobility of its particles. It yields to pressure when closely confined.

For let a cube of unvulcanised rubber compound be made of from $\frac{5}{8}$ to $\frac{3}{4}$ inch dimensions. It may easily be built up of squares cut from a sheet of gum. Let it be invested in plaster in a dental flask, by placing it on a bed of soft plaster and immediately filling the flask. There will then be no parting joint, and no escape for the rubber. Let this be vulcanised after standing twenty-four hours, or long enough to ensure a complete and thorough hardening of the plaster.

It will be observed that the plaster has cracked at each angle of the cube, and a thin fin of rubber has been injected into the opening. The expansive force of rubber, as illustrated above, is one source of the trouble experienced in putting up dental plates. If the rubber is closely confined, a force may be exerted by its expansion which the contents of the flask cannot resist. Broken blocks, open joints between the sections, teeth forced out of place; all are caused by the close confinement of the rubber by insufficient gateways, or from their being filled with surplus rubber by careless packing.

Another inspection of this cube will show that its sides, instead of being flat, as they were when it was flasked, are concave. The shrinkage follows the plane of least resistance, viz., chiefly on one side—the top; small air bubbles in the plaster retaining the other sides, and preserving them in nearly their original shape. The concavity, being nearly all on one side, is all the more perceptible. The explanation is, the rubber, as it hardened, became more dense, and suffered a sensible diminution in its bulk. This shrinkage is inherent to the process of vulcanisation, and occurs with all rubbers, unless vulcanised at such a heat as to render the sample spongy in the centre. The manner of vulcanising makes little difference. Whether invested in plaster, or closely enveloped in heavy tinfoil; whether vulcanised under water or in steam; whether the compound be rubber and sulphur alone, or largely composed of pigment or other foreign matters; black, red, pink, amalgamated rubbers; the result in all cases is the same, varing according to the amount of foreign matter contained in the compound.

There are, then, two shrinkages to be taken into account in vulcanite; one inherent to its production from the compound of crude India rubber and sulphur, and another from changes of temperature. The two combined cause failure in making vulcanite dental plates, from want of proper adaptation.

It is possible to vulcanise by heat without pressure, but the results attained are not as good. The process usually gives rise to sulphuretted hydrogen, which has been deemed a necessary concomitant.

This need not be, as is shown as follows:—A piece of rubber compound was closely enveloped in heavy tinfoil, and soldered with pure tin, so that it was hermetically sealed. It was then vulcanised in steam at 90 lbs. pressure, without being flasked. If any gas is given off during the vulcanising process, it would cause puffing of the tinfoil envelope; but this did not occur. The tinfoil was as closely applied to the rubber after vulcanisation as before.

Another sample, similarly prepared, was placed in a double chamber vulcaniser, and subjected to the same heat for the same length of time as was the first sample. Steam was not admitted to the vulcanising chamber, and the blow-off valve was left open; so the sample was subjected to heat without pressure. On removal, the tinfoil envelope was found distended, and a puncture gave vent to sulphuretted hydrogen gas. The rubber compound was not perceptibly hardened.

Reports of Societies.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE Annual General Meeting of the Society was held in the Rooms, 30, Chambers Street, Edinburgh, on March 11th—the President, Mr. W. Bowman Macleod, L.D.S., in the chair.

After the reading and confirmation of the minutes of the previous meeting, the Treasurer (Mr. M. Macgregor) submitted his report. This showed an income of £49 9s. 10d., derived from subscriptions, entry money, and interest on bank account. This, with a balance carried forward from the previous year, and a deposit receipt of £95, gave a total of £146 10s. 10½d. After deduction of expenses, which included printing, rent of rooms, stationery, &c., &c., a sum of £112 7s. 0½d. was left as representing the funds of the Society—an increase of £15 6s. 0d. over the corresponding amount of the previous year.

The Curator and Librarian (Mr. G. W. Watson), in tendering his Report, said he had great pleasure in announcing that Mr. Robert Hepburn, of London, had very generously presented to the Museum the large collection which had been on loan from him for a considerable time past in the Society's

Museum, and which included cases containing a series of mineral teeth, with the maker's name attached, from 1815 to 1863; also gum work blocks of moulds for teeth, old-fashioned instruments, &c., &c. Mr. Watson then read the letter he had received from Mr. Hepburn, which expressed his appreciation of the good work done by the Society, and his best wishes for its continued prosperity.

On the motion of the President, the meeting recorded its sense of gratitude to Mr. Hepburn for his handsome donation, especially as many of the objects included were unique, and there were many others, duplicates of which were only to be met with in similar Museums. The Secretary was desired to communicate their thanks to Mr. Hepburn.

On the motion of Mr. Andrew Wilson, seconded by Mr. Finlayson, office-bearers for the forthcoming session 1887-8 were elected.

Casual Communications.

Mr. Watson described a lower right wisdom tooth of abnormal shape, which had been extracted at the Hospital, with considerable difficulty, by one of the students. On the coronal portion of the inner margin of the posterior lingual root arose a somewhat longish oval protuberance, projecting backwards and slightly outwards—constricted at its attachment, but swelling out towards its extremity. It was covered by a thick and highly vascular membrane (enamel membrane), the whole being beneath the surface of the gum when the tooth was in position in the mouth. At the base of the protuberance, and somewhat between the normal roots, was situated a third small and somewhat flattened root. He had made a section through the abnormal portion, and used part of it for a micro preparation, from which was taken a photo-micrograph. On examination after section, the pulp chamber was found to have passed some distance into the protuberance, which, in fact, was analogous to the crown of the tooth. Of the general appearance of the tooth, the members would be able to judge, from the remains of the tooth, and also from a model of the tooth in its entirety,—and the nature of its histological structure could be better understood by reference to the photo-micrograph. The probable physiological explanation of this malformation, was that the germ of a supernumerary tooth had been developed in close approximation to the third molar, with which it eventually coalesced, the small extra root properly belonging to the supernumerary, and the two teeth possessing pulp chambers in common.

Mr. Watson also called attention to the suitability of photo-micrographs for teaching purposes, owing to the great improvements in objectives within the last few years, with which most beautiful and satisfactory results could now be obtained. In one of the specimens exhibited—a full-length section of a lower first bicuspid, with an odontome upon the root—it was impossible a few years ago to get a lens to take in more than the crown of the tooth, but now it could be represented in its entirety.

Photo-micrographs of osteo-dentine, dentine of repair, &c., were also shown.

Mr. Macleod made a short communication on the subject of Cunningham's method of facing hard rubber plates with metal. He said this process has for its object the placing between the palatine surface of vulcanite dentures and the mucous membrane of the mouth a layer of gold, which, being a good conductor of heat, will reduce the tendency to inflammatory action which vulcanite is said to induce. Several attempts have previously been made to line the surface of plates by means of gold leaf, &c., but these have all proved failures, owing to the readiness with which the gold lining scaled from the plate, to say nothing of the difficulty of carving the leaf in a uniform and unbroken surface round isolated teeth and up to the margin of the finished plate. Cunningham's process has none of these defects. Whether it will reduce the liability to congestion or not, it presents an attractive and workmanlike finish, and a surface which is more readily kept clean, and on these two points deserves our present commendation, leaving the more debatable one of avoidance of inflammation to be determined by experience.

Mr. Macleod then illustrated the process on prepared models, and the finished work by specimens made by Cunningham and himself. For a detailed description of the process see the British Dental Association Journal of November, 1886. Instructions and liberty to work the method can be had from Mr. Cunningham, 27, Larcom Street, Walworth Street, London, S.E.

Mr. Wilson said that he could not see how any benefit could be derived from the heat-conducting property of the gold lining, as it was covered on its lingual surface by a thick layer of vulcanite, its only free surface being practically the edge exposed at the palatal margin. The metallic layer might possibly assist in the case being kept clean, but the whole affair had an unpleasant odour of humbug about it. Having had personal experience of a vulcanite surface, both coloured and uncoloured, in contact with the palate for full five-and-twenty years, he had found no uneasiness which could be traced to its being a non-conductor of heat.

Dr. Smith said he was not quite sure how the conducting power of a metal would be influenced by being coated on one side by vulcanite in a cavity such as the mouth, where the temperature was not always uniform. The metal might act as a conductor of heat in two ways—it might convey heat from the palate, but on taking hot food into the mouth it would act in the opposite manner. This, the vulcanite coating might obviate. As for irritation being caused by vulcanite, it no doubt might occur in exceptional cases, but he had seen very similar irritation occasioned by gold plates, and long ago by the old-fashioned bone sets—in certain patients.

Mr. Brownlie said there can be no question about the improved appearance which Mr. Cunningham's process gives to vulcanite work—converting what is, in its best fitting form, an unpleasant-looking surface into a "thing of beauty." In my humble opinion its merit ends there, however.

From the notices which we have had of this process, and the statements made in connection with it from time to time, it appears to have been devised to cure, and has been thought to cure, a condition with which every practitioner is more or less familiar, but which is not due to wearing vulcanite. I can recall as many cases of the like condition when gold was worn as when vulcanite was the base. Want of cleanliness explains much of it, but not all. In some cases we must look upon it as a condition peculiar to the individual, aggravated by continuous wear and a close fit.

Composition for Duplicating Models.

The following communication from Mr. Whitehouse, London, was then read, and specimens illustrative of the composition and varnish exhibited.

As I have much improved the duplicating composition which was brought under the notice of the Society two years ago, I have much pleasure in forwarding a sample for the members' inspection, also a model and plate, showing the perfect accuracy of the duplicate. In working the composition, I found that it absorbed water and tended to impoverish the material and destroy the perfectness of the duplicate obtained. After trying several varnishes, and finding each defective, I think I have obtained the desideratum in a solution of india-rubber and benzoine. The solution is floated for a moment over the composition, and the surplus instantly poured off, and there is left behind an almost imperceptible coating, which is absolutely waterproof. As it now stands, I think it is perfect, and would feel pleased by members trying the composition and varnish, and at next meeting giving an expression of opinion.

The samples were then handed round, and the President agreed to test the composition and report.

The President then delivered the following short valedictory address :—

In vacating the chair of this Society, I may be allowed to express the pleasure which its occupancy has afforded me, and to thank the office-bearers and members for the hearty and consistent support which they have afforded me. Although nothing very startling has occurred in our history during the past two years, its existence has been marked by a steady maintenance of healthy interest amongst its members, and the addition of many minor contributions to histological, pathological, therapeutical, and mechanical departments of our science, which, if they have not inaugurated a revolution in our practice, have materially assisted in the development of professional perfection.

We began the term of my office by a most interesting and well thought out paper on the "Missing Incisors in Man," by Dr. Edwards, of Madrid, which afforded ample scope for divergence of opinion, and led to a most friendly and instructive discussion. This was followed by "Illustrations of the Pathology and Physiology of Teeth," by Mr. Watson ; and at our next meeting we had a practical paper demonstrating the simplicity and effectiveness of Dr. Coffin's method of regulating the teeth by means of piano wire. At our next session we had a conversational meeting devoted to the "Treatment of Carious Teeth in Children," the leading part in which was taken by Mr. MacGregor, our senior vice-president elect, and our first year was closed by a most exhaustive paper on the "Mucous Membrane of the Mouth," by Mr. E. A. Cormack.

This year we opened with a masterly paper by Dr. Symington on "The Position and Relation of the Teeth in Children," in which he gave us the results of original observation in sections of the head made while the cadaver was frozen. The vexed and still unsettled question of "Pyorrhoea Alveolaris: its Etiology, Pathology, and Cure" next engaged our attention, and more recently an admirable treatise on "Alveolar Hæmorrhage," by Mr. Nicol, of Leeds, evoked expression of experience and opinion which was deemed so valuable by our Southern contemporaries that special attention was called to the transaction on its republication in the pages of the Association journal. This brief catalogue of our more formal and prepared transactions gives, however, but a very meagre idea of the quantity or value of our business. Night after night cases in practice and abnormal specimens of dentition and methods of treatment, and mechanical appliances, were brought before the Society, and yielded a rich harvest of technical knowledge; and to-day we close the present session by a series of contributions and communications which I think the most distant member must admit has well repaid the dangers, the expenses, and discomfort incident to travel at this uncertain-weather period of the year.

Before we meet again as a society, and before my esteemed friend and successor in this office—whose absence to-day through a serious illness, from which I am happy to say he is steadily though slowly recovering, somewhat mars the pleasure and completeness of our meeting—takes the chair, there will have been held in Washington City, U.S., the third International Medical Congress.

To the Dental Section of that Congress we may look forward with the fond anticipation that, affording as it will an opportunity for the leading minds of the profession in all countries to contribute their theories and their facts to the general stock of our knowledge, we shall meet together with our intellects refreshed, and find in the proceedings of that World's Congress matter on which to sharpen our wits, and strong food upon which we may chew the cud of reflection, and it may be assimilate for our own and our clients' good during the monthly gatherings of session 1887-88.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

LECTURES ON DENTISTRY FOR POPULAR AUDIENCES.

To the Editor of the "British Journal of Dental Science."

SIR, I was much pleased to see your leader on the above subject in your issue for April 15. It is a subject in which I am greatly interested, and I need hardly say that every dentist who is at all enthusiastic in the welfare and advancement of his profession, will agree with your remarks *in toto*. For the past twelve months, I have given to the members of Mutual Improvement Societies, Literary and Debating Classes, and to the scholars of different schools, a lecture, entitled, "The Teeth: Their Structure and their Hygiene, with Remarks on How to Save Them." Now, without one solitary exception, my lecture has been listened to with the greatest attention, and much interest and pleasure taken in it, to say nothing of the benefit received.

I have always had it as well illustrated as possible, with both enlarged plates of the teeth, the head and neck, and skulls; and at the close I have such statements made to me as the following: "Ah! if I had only heard your lecture thirty or forty years ago I should not now be without my teeth;" and, "Who would have thought that by stopping teeth it would prevent them from decaying away, and thus save the trouble and expense of having to get false ones." I have had such questions asked as, "How is it other dentists don't lecture, and thus let people know that there are ways and means of preventing the natural teeth from decaying?" and, "Do you mind coming and giving us your lecture in our schools, in aid of so-and-so? Mr. —— and Mr. ——, both dentists, attend the church (or chapel), and we thought that perhaps, as they might be there, you would not like to come." I have generally answered: "Well, you might ask one of them to give you a lecture on the same subject, and if they are unwilling I shall be most happy to oblige you; and I do not mind in the least if the room is full of the 'profession.' I must say that it is rather a delicate point giving a lecture on "The Teeth" in connection with any religious body, especially if that body happens to have a prominent member who is a dental surgeon. I find that some of my brother practitioners are inclined to think that I come as an usurper, and to try and "wile away" their patients. Your article finishes by saying, "they may be rendered 'baneful' to the last degree." This is too true, and I should say to any intending lecturers: "Be sure that there is not a single sentence in the lecture which may be construed into an advertisement for yourself." Many a time I have been inclined to say to any one who has asked me to lecture: "I hope, if I come, you won't think it is done as an advertisement; and I trust it won't cause any offence to Mr. ——, who, I know, attends your church." My lecture is simple, and easily understood, and I impress upon my audience that "prevention is better than cure," and that, by paying thorough attention to cleanliness, such as brushing them *nightly* with "Pulv. Cretæ Precip," and having them examined at stated times, there is not, as a rule, any danger of the teeth being lost by decay. I could greatly extend and enlarge the present letter, but my views are so entirely in accordance with those expressed by yourself, that I think it needless to dwell on it further. As a last sentence, I would say to any dentist who proposes to lecture on this all-important subject: "Always, when giving your lecture in public, have, if possible, as chairman, a medical man, or some person of eminent respectability or local prominence. This, as a rule, will ensure a good audience; and their presence will carry with it the conviction that the lecture is not only *bona fide*, but is what its title implies, "a lecture on a popular subject, given for the information and the benefit of 'the people.'"

Your obedient servant,
CHARLES F. FORSHAW, D.D.S.
Late Dental Surgeon to the Bradford Children's Hospital

VACANCIES.

National Dental Hospital, 149, Great Portland Street. Post of Assistant Dental Surgeon is vacant. Applications by the 20th May.

The Dental Hospital, Leicester Square. The post of Assistant Dental Surgeon to the above Institution is vacant. Applications to be made by June 1st.

Communications have been received from—

Mr. H. J. Moxon, London; Mr. Forshaw, Bradford; Mr. Morton Smale, London; Mr. Humphreys, Birmingham.

ANSWERS TO CORRESPONDENTS.

Enquirer had better consult "Electro-Plating," by J. W. Urquhart, published by Crosby, Lockwood & Co. Tin requires silvering before it will take the gold.

BOOKS AND JOURNALS RECEIVED :—

"*Wanderings of Imagery,*" *by C. F. Forshaw, Woodhead, Bradford.*

British Medical Journal, Pharmaceutical News and Transactions, Chemist and Druggist, Dental Cosmos, Ohio State Journal of Dental Science, Southern Dental Review, Dental Record, Correspondenzblatt für Zahnheilkunde, Journal of the British Dental Association, Southern Dental Journal, Items of Interest, Dental Eclectic, L'Art Dentaire, The Dental Advertiser.

British Journal of Dental Science.

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THE CARE OF THE TEETH.*

By Henry J. Moxon, L.D.S., *Dental Surgeon to the Schools.*

Ladies and Gentlemen, Girls and Boys,—

I want your attention while I introduce a subject I attend these schools to practise. I have strong grounds for believing that a few words addressed to you collectively, will be more impressed upon your minds than by giving you individual instruction. The purpose of this lecture, I need hardly say, is not to acquaint you with the science of dental surgery, but is merely an attempt to make you familiar with a few facts relating to the teeth from which you have so much comfort; your enjoyment this day being in great measure, due to them, because without the teeth you could not have masticated the food put before you.

Now, probably, no structure in the animal body, not even the eye itself, gives more evidence of wise design than there is to be found in a completely developed tooth; but how much more wonderful to find that when you were little babes, and before you had breathed the air of this world, preparation was being made in your jaws for the development, not only of your first, but of your second teeth. Teeth are developed from true skin. In lower or invertebrate animals the term teeth is applied to structures of very different nature and form. In man and higher mammals two sets of teeth are developed, the temporary and permanent set. The structure of teeth in man exhibits a combination of enamel, dentine, and cement. Each tooth is divided into a crown, body, and root. Each tooth is developed in a tooth-sac, the sac in which the permanent tooth is formed being simply at prolongation of that in which its predecessor of the temporary set was developed. Teeth of the temporary set are gradually displaced from below by the upward growth of the permanent teeth, the fangs of the temporary teeth being absorbed, and the latter falling out as the successors are developed. In man, the teeth are called—according to their shape—incisors, canines, bicuspids, and molars ; and the permanent set consists of thirty-two, which are arranged more uniformly than those of the temporary set.

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* A Lecture delivered to the officers and senior children at the North Surrey District School, Anerley.

The first, or temporary teeth are intended to last only a short time, while the others (the permanent teeth) are destined to last during the whole term of life. Instances are not wanting in which children have been born with two or more teeth ; in general, however, the teeth first begin to appear at the age of from five to eight months, and continue to develope till about the end of the second year.

Birds possess no teeth, but have the margins of the jaws sheathed with a hard, horny substance. Certain extinct birds appear, however, to have had tooth-like processes developed in their jaws. We find that, save in the crocodile, the lower animals have their teeth fastened in various ways to the jaws, and not implanted in sockets, as in man. In sharks, the teeth are placed in a common groove, and they possess the most terrible pair of shears that can be formed by jaws. There are not many instruments so efficient for their purpose as their jaws, in fact, it is difficult to handle one freely without cutting one's fingers. Their capacity, too, is equal to their powers, for a pair of jaws, taken from a shark of not more than nine feet long, has been known to pass over the shoulders and body of a man six feet high. It is now admitted that they employ only the outer row, the inner ones being a provision of nature against accidents—the breaking of a tooth—which often must occur, and when it does happen, the corresponding tooth on the inner side becomes erect, and is by degrees pushed into the place of the broken one. Teeth sometimes undergo great modifications, as in the poison fangs of serpents, which represent greatly modified teeth, and which are grooved by a canal for the transmission of the poison-fluid. As regards the number of teeth which occur in vertebrates, the greatest variation may be found to prevail. The Narwhal has but two teeth in its adult state ; and some dolphins over two hundred.

We find the teeth of the horse, the cow, and the sheep exempt from decay ; their food requires so much mastication that the long-continued chewing it undergoes serves to keep the teeth clean and good. In a few animals their great power is due to the arrangement of their teeth. Take the hyæna, for instance: the whole of that animal's dental arrangement appears to have been formed with a view that the animal should be enabled to break the hardest stones, for the molars are cone-shaped, blunt, and very large. The hyæna, as you are all aware, possesses great strength—carries off little children at night in its mouth, and has the power of dragging away large bodies. These animals are only known of in Asia, and North and South Africa.

This is the tooth of a walrus, or sea-horse. About the year 890, Octher, a Norwegian, presented three of these tusks to King Alfred, who, in consequence of their great price and excellence, decorated the donor. Their length varies from 10to 30 inches, and the average weight is about eight pounds. These animals abound in the Gulf of St. Lawrence, and Hudson's Bay. I had intended showing you some ancient and curious dental specimens lent for this occasion by professional friends and Messrs. Ash & Sons, but the box containing them has not yet arrived here from London.

I will speak to you now of the proper employment of teeth. The use of the front teeth is to divide and cut the food, that of the back teeth to grind and crush the food; and, in exercising your teeth on food, it is all-important to eat slowly and deliberately, and that should always be done. The thorough chewing of your food is important, because it is by exercise the teeth are kept in a healthy condition. And, again, if your food is not properly treated in the mouth, your digestive organs suffer, and you are likely to become old and enfeebled before manhood is established. It is the function of the teeth to make the food fit for the action of the gastric juice, and that juice dissolves the food faster if it has been broken into small portions. So it happens that a solid morsel, swallowed whole, may remain in a healthy stomach many hours before it is dissolved; while, had the same morsel been crushed, or broken up into many pieces, and in that process mixed with the saliva, and then swallowed, it would have been reduced to pulp in about an hour; hence, it is important that the food, before it is introduced into the stomach, should be properly crushed and divided; in other words, perfect mastication is necessary to perfect digestion. To effect this purpose you are provided with a special apparatus—namely, the teeth. I lay stress upon this process of mastication, because many of your mouths come before me in a condition which tells that you do not properly use your teeth.

Among savage tribes, or those living pretty much in accordance with simple and natural laws, decayed teeth are quite exceptional. Another reason why the teeth of uncivilised people are, for the most part, so firm, is, that they are accustomed to eat hard food ; this keeps the gums and teeth in a firm and healthy condition. Some negroes live almost entirely on dates nearly as hard as wood. This brings me to things hurtful to the teeth. Do not give your teeth work which they are unable to discharge. The mouth is frequently used to crack nuts with, bite threads, draw corks, and even nails. These are very bad practices, and in many ways injurious. Never crack nuts with your teeth ; you may crack teeth instead ; and some day, when you have forgotten all about the nuts, you will be surprised to find the half of one of your teeth drop off. The teeth of the present generation are very subject to disease, and I believe that our teeth are much inferior in strength and durability to those of past generations ; and amongst the many causes may be mentioned the condition of modern civilisation, and want of perfect employment of the teeth. Organs or structures not properly called into use undergo some form of degeneration. If the decline of the teeth continues, it has been predicted by Darwin that man will eventually become ane dentulous being.

Now, with regard to the extraction of teeth, dentistry has made great strides during this century, as only skilled operators are employed, whereas, a few years ago, blacksmiths did the work, and then barbers. The tools used in those days were strong pincers, a chisel and hammer: hence the term, "punching out the stumps."

My attention was drawn a few days ago to an advertisement which stated, "Teeth extracted without pain." You would suppose the dentist means the patient will suffer no pain—that is a wrong conclusion—it is the dentist who feels no pain. There is no operation so much dreaded as extraction, and I only perform it in these schools when the condition of a tooth renders it incurable, or where it is necessary to make space in over-crowding.

I will now point out to you "How to cleanse the teeth," and this is the question of the evening, and one to which I ask your close attention. The usual method is that of brushing them across from side to side, the result being, that only the permanent parts are cleansed, and the sides are untouched by the brush. Now, I want to impress upon you the necessity of thoroughly cleansing teeth once in each day (oftener would be better), and, until some more suitable preparation is provided, I want you to draw your tooth-brush across a piece of soap, and then brush all the teeth up and down, inside and out. The taste of soap is not very pleasant, but when you remember how important it is to apply it, I feel sure you will persevere in using it. Soap is a very valuable agent in the mouth, for it destroys the animalculæ, which cause decay in teeth ; and at the same time soap is very harmless to the enamel. The regular cleansing of the teeth will do much to prevent the accumulation of tartar which is contained in the saliva, and settles round the teeth in thin layers ; and, as many of you know, I have frequently removed it from your mouths in large quantities.

A dentist is often asked, " How soon should the first tooth-brush be used ? " and the proper reply is, " As soon as there are teeth to use it upon." Some say, " My gums bleed when I use the brush." The gums bleed because they are not cleaned enough ; frequent brushing will render them healthy. Cleanliness of the teeth and mouth is an admitted necessity to health and comfort, and any trouble you take in the matter you will be well repaid for years hence. Cleanliness is a preventative against disease of the teeth themselves, and I believe, if teeth were kept perfectly clean they would be less frequently affected with disease ; in fact, disease would be reduced 75 per cent. ; and I am convinced that every one whose attention has been directed to the cleaning of their teeth regularly have better ones than those who have neglected them.

And now we arrive at "The detection of decay," which, as a rule, causes toothache. Dogs suffer at times severely from toothache, and it is often mistaken for hydrophobia. Unlike dogs, you are able to make known when your teeth trouble you. There is rarely any extensive decay without pain in the tooth, and there is rarely much pain in the tooth without decay. Pain is nature's warning note that the assistance of the dentist should be sought. I need not mention the numerous causes of pain in the mouth ; suffice it for you that, should any of you suffer, it is a duty you owe to yourselves, and to me, to at once let me investigate the cause.

Again, in most conditions of decay, stoppings placed in the teeth will maintain them perfect, when their fellows which have not been treated, crumble away and are useless.

I will not detain you longer to-night, as I have already gone beyond the time I had intended addressing you; but on a future occasion I will speak further on the subject, and introduce to your notice some curious specimens, as well as improved dental appliances, which have been promised by the leading firm of dental manufacturers.

ON THE PATHOLOGY OF RIGGS' DISEASE, OR PYORRHŒA ALVEOLARIS.*

By F. Newland Pedley, F.R.C.S., L.D.S., Eng.

Mr. President and Gentlemen,—

At our last meeting but one, a "Casual Communication" was brought forward on the treatment of Riggs' Disease, and a desire was expressed that some one should open a discussion on its pathology at an early date. I volunteered, and subsequently acceded to the request of our Secretary that I should read a paper on the subject at this meeting.

We must all admit that it is a very unfortunate thing for a disease to be christened after the name of its discoverer, for there is always a doubt whether his description was correct; and even where it is shown that the original interpretation was entirely wrong, the name may long survive to perpetuate blunder and bar the road to a more accurate perception.

How much greater does the difficulty become when a lesion is named after a man who never recorded a description of it! At a meeting of the American Dental Association, in 1877, Dr. Rehwinkel, Chairman of the Committee of Pathology, stated that "he had recently addressed Dr. Riggs for some account of his views, but had failed to receive any response. No printed reports or statements of Dr. Riggs were to be found. . . . It would be well if Dr. Riggs could be induced to make a statement of his views through the journals," &c.

This challenge was never responded to, and in the year 1881, at the Medical Congress, Dr. Riggs denied that he had been personally instrumental in attaching his name to the complaint. But we are aware that Dr. Riggs invented a series of instruments for removing tartar buried beneath the gum; hence the use of his name would wisely be confined to describe a form of treatment by scraping, directed against certain abnormal conditions of the gums, which he recognised as peculiar, but attributed to the effect of tartar.

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* A Paper read before the Odontological Society of Great Britain.

Years went by, and the designation Riggs' Disease was retained, although it was used with quite a different meaning to the original, by many who applied it to a lesion of constitutional origin, and not necessarily associated with salivary calculus. To obviate this confusion the appellation Pyorrhœa Alveolaris was substituted for Riggs' Disease. This more recent name is not free from the objection of being a generic term merely indicating a symptom, and it requires a sharp definition to intimate in what sense we elect to adopt the title. For the general acceptance of the term Pyorrhœa Alveolaris, by dentists in Europe and abroad, assumes that we all recognise a certain definite disease to which it is applicable; and when a distinctive title is given to a complaint a definition should be forthcoming, which in turn should be based on its pathology. Unhappily, Pyorrhœa Alveolaris received a compromising name first, and stills lacks a satisfactory pathology. In this dilemma we must, to-night, select the salient physical features and naked-eye appearances upon which we rely to distinguish this particular disease from others to which it bears points of resemblance, to do duty as a definition, and serve as a fixed point from which we can discuss and develop its pathology. Eventually I trust we shall be able to endow the lesion with a name of scientific import.

The local conditions to which the terms "Pyorrhœa Alveolaris" or Riggs' Disease have been applied, may be briefly quoted thus, from the description of well-known authors. The mucous membrane, especially that adjacent to the teeth, appears deeply congested with venous blood, tumid and thickened, but not filling up their interstices at their necks, and detached for some distance from the surface, from the fangs. A thick fœtid discharge may often be pressed up between the teeth and mucous membrane, which gives to the breath a very repulsive odour. This condition of things continuing, the alveoli become absorbed, and at times more or less denuded, whilst the fangs of the teeth become coated with a layer of thin, hard, green-brown tartar. Ultimately, the disease progressing, the teeth one after another drop out. The alveolar margin is sometimes thickened in substance. The pain varies; it may be neuralgic from the first, but it is not generally considerable until the periosteum is fully involved.

Various theories have been advanced in explanation of the appearances and conditions occurring in the above complaint. I do not purpose going deeply into the germ theory. Doubtless numerous varieties of germs have been found in the purulent discharge from the alveoli, and an epidemic form of the disease is said to have appeared in Switzerland, and to have disappeared as rapidly as it came. The discharge contained peculiar micro-organisms, but the researches of modern bacteriology would not justify the conclusion that these germs were necessarily the cause of the disease; for even in the case of the well-known bacillus of tubercle, the question remains to be decided whether the bacillus is the cause or effect of the complaint.

American literature supplies us with a "catarrhal theory" for Pyorrhœa Alveolaris, based on the fact that the alveolo-dental membrane is continuous in structure with the deeper layer of the mucous membrane. It is suggested that catarrh of the mucous membrane of the mouth causes sloughing of the alveolo-dental membrane, by cutting off the blood supply. A serious objection to this is that the chief vascular supply to the lining membrane of the alveolus is not derived from the mucous membrane of the mouth. We need also tarry little over another point, which consists in the statement that in some cases of Pyorrhœa Alveolaris pus was absent. Little importance need be attached to this, for the amount of pus formed is merely an index of the intensity of the inflammation, and the vascularity of the part. Chronic inflammation may well exist without pus, or the pus may be present, though invisible to the naked-eye examination, or may be entirely absent at times, though present and visible at others.

The relation of salivary calculus to Pyorrhœa Alveolaris is a question of great moment; for, in the opinion of many dentists, tartar is the origin and essential cause of the complaint. This is obviously unsatisfactory as regards the ordinary crusts of calculus that are so commonly found clothing the crowns of teeth. All dentists see innumerable cases of this description, in which the gum and socket may recede as the result of the mechanical irritation from the calculus; but there is no considerable separation of the periosteum from the root of the tooth, and simple removal of the tartar and attention to cleanliness arrests the progress of the evil. But grave attention is frequently drawn to a thin layer of calculus that is found upon the roots of teeth, extending upwards beneath the inflamed periosteum of the tooth, and in some cases reaching the very apex of the root. The characters claimed as distinctive of this layer of deposit are that it is nodular, harder, and of a different colour to ordinary tartar ; but it must be remembered that the calculus deposited beneath the periosteal pouches is subject to different conditions to that on the exposed portions of the tooth. Old tartar is often hard and nearly black in colour, and that which forms beneath the margin of the gum remains protected from removal by accident, mastication, or the use of a tooth-brush. Tartar mixed with pus is green. The nodular character of the deposit is probably attributable to the irregularity of the surface of the alveolus, and of the inflamed lining membrane, in contact with which the nodules are formed. The fact must not be disregarded that the deposit on the submerged roots is braided during its development with pus and effusions from the inflamed periosteum and gum. The difference in colour is not irreconcilable with the salivary origin of the deposit, when we remember how vastly tartar varies in shade under altered conditions, and in respect of its age ; yet a formidable theory has been based chiefly on this variability of colour, which ascribes a "sanguinary" or "serous" origin to tho nodular deposits that form beneath the margin of the gum.

Dr. Ingersol, an American dentist, discovered an "induration of granular formation" at the apex of a tooth that he had extracted, and he affirmed that he subsequently observed twenty such cases. Analysis showed dark colouring matter in these formations, which, in his opinion, were only found in connection with ulceration, and this material he called "sanguinary calculus" because he inferred that it could not have come from the saliva.

To establish his point it would be necessary to prove that these calcareous deposits were entirely inaccessible to saliva. It is an eloquent coincidence that the analysis only differed from salivary calculus in the presence of colouring matter, and, granting for the moment that this were effused as some form of hæmoglobin from the capillaries of the inflamed periosteum, it would not necessarily follow that the calcareous deposits came from the same source. None would be prepared to express surprise that an irritated periosteum should occasionally deposit on the root of a tooth small masses of calcareous material similar in nature to callus or osteophytes. In the vast majority of instances the nodular deposit on the roots of teeth is plainly observed to progress in a direction from the cervix towards the apex, and not the reverse. It may here be mentioned that tartar has never been seen upon the surface of an unerupted tooth.

One other form of salivary calculus should be referred to, and that is the annular collection of hard, dark material that is so often found beneath the free edge of the gum. Its formation and longevity are favoured by the protection of the margin of the gum, even in the mouths of many patients who give scrupulous attention to the use of the tooth-brush. Hard food and careful brushing may remove every vestige of tartar from the exposed portions of the teeth without being able to prevent the formation of a ring of calculus beneath the shelter of a gum margin that may have been congested from one of many causes.

In some cases of Pyorrhœa Alveolaris there has been no tartar whatever found on the roots of teeth extracted, but unfortunately this is not a final argument, for it may be legitimately urged that a thin layer of tartar might have been present originally, but was dissolved away by the vitiated secretions of the mouth, which had undergone a change in character and chemical reaction.

The presence of salivary calculus is insufficient in itself to account for a special disease with features of constitutional origin, and there is ample reason for seeking the cause of Pyorrhœa Alveolaris in a systemic condition. It is known to occur in the mouths of patients whose health has been undermined by debilitating influences and injudicious habits of living. Frequently the disease is seen to attack the opposite sides of the mouth in a symmetrical manner. This is opposed to the assumption of a local origin of the affection. Cases have followed the long use of mercury, iodide of potassium, or chloride of sodium; though it is open to doubt how far the blame should rest on the complaints for which these drugs were taken. Pyorrhœa Alveolaris is a common sequel of malarial fever in America, and these patients are said to experience a great craving for salt.

Young patients recovering from eruptive fevers are sometimes subjects of Pyorrhœa Alveolaris. Frequent pregnancies are a rife source of the disorder.

The recent researches of Mr. Bland Sutton in Comparative Dental Pathology have supplied us with invaluable data. He established the fact that animals kept in captivity suffered from premature loss of teeth. Mr. Sutton collected numerous specimens of recession of the alveolar process, both when tartar was present and when it was not. At a meeting of the Pathological Society he showed a considerable series of the skulls of monkeys whose jaws were affected with recession of alveolus as the result of rachitis, and he recorded a similar condition occurring in a case of mollities ossium. During the time I was Dental Surgeon to Evelina Hospital, and since, I have seen many cases of premature loss of teeth from the recession of alveolar process and gum in rachitic children. Mr. Bland Sutton showed that, in the case of lions kept in captivity, unsuitable food, by preventing the assimilation of lime salts, produced cleft palate in the progeny. Also, that a series of pregnancies at short intervals in the case of a female dog led to similar defects in the osseous system of the offspring, by exhausting the maternal store of lime salts. Also, that in a snake kept in captivity the bone of attachment became absorbed, leading to the loss of the teeth, which were abnormal in size, number, and attachment. The consideration of the above three facts in connection with one another offers a striking parallel to the hereditary form of Pyorrhœa Alveolaris, and suggest that an element of the complaint might be hereditary defects in the structure of the teeth and alveolar process.

Here one may cite the experience of all dentists that the removal of affected teeth usually cures the lesion where the teeth have stood, and that the disease has a tendency to spread from affected teeth to those in their neighbourhood.

Attention has recently been drawn to Tabes Dorsalis in connection with the premature shedding of teeth. I recently examined two cases of advanced Tabes Dorsalis in the wards of Guy's Hospital. The disease was well marked, and neither patient had ever used a tooth-brush, but there was no evidence of Pyorrhœa Alveolaris. All wasting diseases and depressed conditions of the nervous system are conducive to the premature shedding of the teeth, but Pyorrhœa Alveolaris is not a necessary concomitant of advanced Tabes Dorsalis. My friend Dr. Hale White is present to-night, and I leave this phase of the subject in his able hands.

Whilst a depressed condition of the constitutional strength is the most important factor in determining the disease Pyorrhœa Alveolaris, local causes favour its development; and in patients of this systemic tendency the outsetof the attach may be traceable to some slight influence, such as the use of a very hard tooth-brush, coarse tooth powder, or the like. A crowded arrangement of the teeth may occasion it, or one tooth may be so placed that the mucous membrane around it escapes healthy friction and becomes the seat of the mischief. No doubt the subsequent deposit of tartar on the denuded portion of the root aids as a foreign body in keeping up irritation of the periosteum.

One gathers from the somewhat diffuse literature of this subject a consensus of opinion that the early stage of Pyorrhœa Alveolaris is characterised by an hypertrophied condition of the muco-periosteal fold around the teeth, accompanied by dilatation of capillary loops, enlargement of papillæ, and rapid proliferation of epiphelial cells. Later on, the gum becomes firm and contracted, and displays increase of fibrous tissue. What changes go on in the socket during the recession of the alveolar margin I am unable to state, for the simple reason that I cannot get a recent specimen. The theory seems to be widespread that the inflamed periosteum becomes separated from the subjacent alveolar margin, thus depriving it of its vascular supply, and leaving it denuded, rough and carious. This may be so in some cases, but there are many in which the alveolar margin recedes, and yet the result of probing is opposed to the supposition that the bone is bare. In these instances the socket wastes without becoming denuded of its periosteum.

At the Medical Congress in 1881, Dr. Walker opened a discussion on Rigg's Disease, and exhibited a number of microscopic specimens, the conclusions he arrived at being that in the present state of pathological knowledge no distinction could be traced between the loss of a tooth socket prematurely by disease, its absorption after extraction, or its wasting in old age, the microscopic characters being identical, viz.: loss of vascularity, increase of fibrous tissue, subacute inflammation passing into the depths of the alveolar processes adjacent to the inflamed gum. The report does not mention to what extent this hypothesis was accepted, and the microscopic appearances described are unsatisfactory in this respect, that the section that would represent Pyorrhœa Alveolaris was taken from the mouth of an aged dog whose teeth were loosening.

The Museum of the Odontological Society possesses specimens, presented by Mr. Bland Sutton, of the skulls of animals which had died in captivity, and whose jaws show evidence of a disease which seems to be an analogue of Pyorrhœa Alveolaris in the human subject. One of these, the skull of a carnivore, is very striking. There is not an even recession of the bone from the margin towards the apex, but the alveolus is obviously attacked to some distance from the margin. Where teeth have recently been lost, the surface of the bone shows depressions and hollows, irregular in outline, with eroded patches and a few spicules of bone that are apparently of new formation. Where the destructive process is at its full activity around a tooth that is being lost, a wide space is noticed to have formed between the tooth and the jaw, by absorption of the bone and the roots of the tooth. The space between the tooth and the jaw is as great at the apex of the root as at the neck. Around the affected tooth the alveolus is lost on the buccal surface, and wherever the root is laid bare it is coated with greenish-brown tartar, but the destructive process is seen to be going on in places where no tartar is present. There is a very peculiar appearance about the alveolar septum between the roots of the teeth, at those parts where it is thickest and most vascular. Here one can trace the outline of what its shape has been, but the bone has been reduced to a condition suggestive of filligre or trellis-work, and the last support of the loosening tooth is obviously pedicles of alveolar process with efflorescent extremities of sponge-like bone. The cementum on the root of the teeth is thinned, and the root itself is greatly truncated by absorption. The general impression remaining is that one is examining a case of osteitis extending from the margin of the alveolar process to a point some little distance beyond the level of the roots of the teeth, and by no means going hand in hand with the deposit of tartar.

The result of local treatment aids us by demonstrating the very refractory nature of well-marked cases. The thorough removal of any tartar from the roots of affected teeth by means of instruments and chemical reagents, and the subsequent use of astringents, gives good results, at least temporarily, by allowing the gum to more closely embrace the roots of the teeth, and preventing the accumulation of tartar and discharge in the alveolar pockets ; but relapses are common, and our main attention must be directed to general constitutional treatment, which comes within the domain of the physician.

The inferences that follow from the points I have enumerated lead to the assumption that the affection which to-night we are calling Pyorrhœa Alveolaris is essentially of constitutional origin. In man and in the lower animals it is found connected with wasting diseases and depressed conditions of the system. The local exciting cause may be of a very trivial nature.

The weight of evidence tends to place Pyorrhœa Alveolaris in the category of bone diseases. The exposed position of the alveolar margin and its intimate relation with organs of such feeble vascularity as the teeth, go far to explain why it is this portion of the alveolus that is first affected, and also the usual arrest of the disease by the removal of the teeth.

AN ABSTRACT OF AN ADDRESS.*

By President of the Midlands Branch of the British Dental Association MR. FRED BULLIN, J.P., L.D.S., Eng.

AFTER referring to the history of Chester the speaker said: Turning now to matters professional, I feel sure that those present, who, like myself, have been for many years engaged upon the battle-field of professional life, will pardon me, if I address myself to-day chiefly to the younger members of our profession. To those who have somewhat recently taken the L.D.S. diploma, *cum curriculo,* of one of the Colleges of Surgeons of the United Kingdom, and probably to many who do not come under that catagory, but who are, nevertheless, legally registered dentists, a sketch of mechanical and operative dentistry practised forty years ago, as compared with the methods adopted at the present day, may not prove uninteresting.

I do not intend to carry you, in imagination, back to the date when general surgery, and crude systems of mechanical and operative dentistry were practised by members of the tonsorial art; to the year 1163, when the monks and barbers had to dissolve partnership, in consequence of the Council of Tours prohibiting the monks from performing any operation that caused the shedding of blood; or to the reigns of Edward IV. and Henry II. (eventful eras in the history of Dentistry and Surgery); or to the reign of Henry VIII., when by Act of Parliament a partnership was confirmed between two companies of Surgeons, and, as the Acts set forth, "there were two several and distinct companies" (trades unions) "of Surgeons, occupying and exercising the Faculty of Surgeons, one called the Barber Surgeons of London, and the other the Surgeons of London," when it was thereby enacted "that the two several and distinct companies should from henceforth be united and become one entire Body Corporate," &c., &c.; but to the eventful, restless, and not always friendly history of the Surgeon and Dental Surgeon, up to the granting of a Dental Charter to the College of Surgeons of England, in September 1859, and the Dentists' Act of 1878.

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* Delivered at the Annuol Meeting of the Midland Branch of the British Dental Association. Held at Chester, April 29th, 1887.

In passing, I may say tradition credits our barber ancestors with having been sufficiently ingenious to file pieces of bone and fix them in position with silk ligatures, to fill up the gaps that were then seldom to be found in the mouths of their patrons and relate to you from memory, as many others still living could more eloquently do, the plans adopted in the two departments of dentistry, from thirty to forty years ago.

It will be, in a few days, thirty years since I came to this city, to practice the profession of my choice. Over twenty-five years of that period, I had the honour of being Hon. Dental Surgeon to our Hospital, the Chester General Infirmary; and on retiring from active service in January last in accordance with the bye-laws, I assumed the position of Consulting Dental Surgeon to that Institution.

Three decades must, of necessity, form the most active and eventful part of a man's professional career, and only those of us who have been so long thus engaged, can, by looking back, be competent judges of the amount of progress made, scientifically and socially, during those years. No young practitioner can possibly appreciate the feelings of amazement that fill our minds, when we compare the principles and practice of dentistry of to-day, with those of thirty or forty years ago. Then, as now, the education of the competent dentist commenced with acquiring a practical knowledge of dental mechanics in the workroom, and his not very frequent visits to his instructor's operating room. The source from which he gained general dental knowledge was limited to the stock his instructor possessed: and so narrow-minded were the dentists of those days, that not even a personal friend would presume to ask permission of a professional brother to enter his workroom. If such a request had been made, it would have been refused, lest he should "pick up" some mechanical idea before unknown to him. Consequently the knowledge of dental mechanics progressed slowly, each practitioner thinking himself the possessor of more wisdom than his neighbour, and selfishly reserving what he did know for his own pecuniary advantage.

The work of the dental mechanic was then more laborious, but cleaner, and more fascinating than now; for the use of vulcanised rubber, as a base for artificial teeth, had not been even thought of. The ivory of the hippopotamus (*sea-horse*), of the walrus (*sea-cow*), and, to a much smaller extent, of the whale, was used in the construction of artificial teeth themselves, or as a base in which natural teeth were mounted.

Many of us can remember the names of the famous "bone-workers" of London, who supplied not only the dental surgeons of London, but the provincial practitioners, with their artistic productions.

In watching the working of this beautiful handicraft, many of us became attracted by it, and aspired to their standard of excellence. I look back myself, with pride and pleasure, to the time when I burned the midnight oil, working on the unyielding block of ivory, striving to attain to similar artistic results.

"It would appear," says a high authority, "from all we can gather, that bone was the only material used in the construction of artificial teeth, until nearly the close of the last century." This would indicate the date when gold, silver, platinum, and palladium (especially the latter) were introduced as materials to mount natural, and, subsequently, mineral teeth upon, chiefly for upper sets, bone still being almost exclusively used for lower dentures up to thirty or forty years ago. The exact date when mineral teeth were introduced must remain uncertain; but we are old enough to remember when it was with great difficulty elderly patients, especially ladies, were induced to wear "false teeth," much preferring to wear the natural teeth, frequently stolen from the battle-field and the hospital, and largely imported from France; for the mineral teeth then made were most unnatural in form and appearance, and would not grow darker with years, however much port wine they came into contact with, Gradually, however, the gold and platina tubed mineral teeth of this country, and the flat teeth of France and America, were destined to supplant the use of natural teeth for dentures.

I have before me a specimen of mineral tooth-work made in Naples about the year 1830; also several specimens of bone-work, which may prove interesting to many of the younger members present. In those days zinc had not been used for models, but the aid of the brass-founder had to be brought into requisition. Afterwards came the fusible metal, and subsequently as now, zinc.

So scanty was the supply of tools in the work-rooms, that the mechanic, with knowledge gained by visits to the smithy and the cutler's workshop, made a large number of the tools used in the work-room, and not a few instruments used in the operating room. The few dental depots, then in existence, had not the stock of tools they now have for selection, and necessity bcame the mother of invention. To illustrate this, I may tell you that the late eminent Mr. Behrend, of Liverpool, who practised so many years in that city assured me thirty years ago, that he had never yet purchased a forceps, or any other instrument, but he found it necessary to place it in the forge and remake it to a design to his own. The proprietors of respectable depots did not send agents to our houses. When they commenced to send them into the provinces, we received invitations to meet them in some commercial hotel in our city, where their goods were displayed, from which we could select, according to our requirements.

I need not say that a great change has come over this scene. From a multiplicity of depots, we, in the provincial towns, receive, sometimes, too much attention from these useful and polite visitors.

Time would not permit me to enter more fully into the former crude appliances of the workroom. The demand for artificial teeth was then comparatively small. They were chiefly the well-to-do patients who indulged in the luxury of sets of teeth. Medical men were not generally convinced by observation of the importance of such mechanical aids for their dyspeptic patients. The majority of those who sought such aid were influenced by feelings of vanity. Since then what a change! The demand for artificial teeth has increased enormously, from a variety of causes. Amongst others may be mentioned the sadly too free use of the forceps. This, long ago, was the misfortune, rather than the fault of the dentist: for science had not yet taught us conservative dentistry. The improvement in the form and variety of tints of artificial teeth is due to the progress of art; the improvement in methods of adapting them, to the restless energies of English and Americans upon the broad field of Dental Mechanics.

About twenty-eight years since I well remember reading in an American Dental Journal, with an incredulous smile, that a Dr. So-and-so had been experimenting with a mixture of India-rubber and some pigment, which, when vulcanised, formed a good base for artificial teeth, and that he had exhibited specimens at a meeting of dentists. The idea then seemed preposterous; and after it had been introduced into this country, an old dental relative said to me, "It is only twelfth-night cake work: it will only be a nine days' wonder." What a mistaken prophecy! For how largely and usefully that material has been used! Through its requiring less time in constructing dentures, and not necessitating such arduous and skilled labour as other materials, it has brought artificial teeth within the means of the middle and lower classes, much to their physical advantage.

Many still living will remember the pains and penalties with which we used to be threatened for infringing Goodyear's patent, by using vulcanized rubber for dental purposes. This it now a matter of history; but the introduction of that material caused quite a revolution in Dental Mechanics, deprived them of much of their charm for us bone-workers, and, I need not say, did not raise the standard of the work-room assistant.

I have no better means than you of ascertaining the probable number of artificial teeth manufactured in this country annually, but we know that the total must be enormous, not only here, but in the United States of America. I have it on the authority of my friend Mr. H. M. Lewis, who has been for many years Managing Director of the great S. S. White Dental Firm of Philadelphia, that between 12 and 13 millions of artificial teeth are annually manufactured in that country alone; not of course to be used in that country only; for in the spring of every year, my friend, Mr. Jules M. Ravel, the foreign agent of the S. S. White family, crosses the Atlantic in one of the swiftest steamers, with quite a cargo of the well-known artificial teeth, and the matchless instruments of that world-famed house, *en route* for the dental depots of London, Paris, Vienna, Dresden, Berlin and Moscow.

I cannot forbear from expressing my surprise that the younger members of our profession are so little aware how much we are indebted to our American cousins for many of the inventions which have become common property, and are claimed as solely the result of English genius. Some instructors do not inform their pupils of this indebtedness, from, I fear feelings of British pride, happily now fast dying out.

As, in the future, our intercourse with our American brethren will be greater than in the past, it cannot be too generally known, that the American gentleman and the Yankee are two very different personages, and that the latter is as much despised by the former, as by us. The late DEAN HOWSON once remarked to me that "The educated American is not a braggart." It is my privilege to count among my most esteemed friends citizens of Philadelphia and Chicago, and I can truly say, that their feelings towards us as a nation, and those of my dental friends towards us as a profession, are reciprocal and most sincere.

(*To be concluded.*)

Reflections from the Surgery.

AN OBSCURE CASE OF DISEASE OF THE UPPER JAW.

Attended with abscess of the cheek, and salivary fistula, &c., and cured after five years duration by the extraction of two upper molars; under the care of J. ACKERY, L.D.S.*

THE case is one of serious trouble in the upper jaw, which, for a long time, seemed independent of the teeth, but which, until the removal of the left upper molars, obstinately resisted treatment. I should like to have the opinions of others on the case, as I think there is sometimes a tendency wtih us to describe cases as *dependent* on dental irritation which would, on careful investigation, equally well admit of another explanation.

The patient, a medical student, aged twenty-six, was sent to me by Mr. Thomas Smith, on 20th September, 1886, and I will give you the notes of his condition at that time.

Present Condition.—On the left side of the face there is a slightly swelled condition of the soft tissues, accompanied by thickening and induration of the cheek, in the centre of which is a conical, soft, fluctuating tumour, about the size of a Barcelona nut, over which the skin is very much thinned, and seems in immediate danger of breaking. The jaw cannot be opened more than enough to admit the tip of the little finger between the incisor teeth.

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* Read at the April Meeting of the Odontological Society.

The substance of the cheek is much thickened, the mucous membrane on its inner surface is of a dusky red colour, and the gum on the alveolar and palatine portion of the jaw on that side is distinctly deeper in colour than normal, and of a soft, puffy character. There is a sinus, above and between the apices of the bicuspid roots, on the buccal side of the alveolus. (I passed a probe into this sinus, which ran backwards and inwards for some distance, but I did not at this time detect the presence of dead bone.) The teeth on this side are all present and free from caries, but the third molar is only half erupted, with its crown pointing outwards towards the cheek. None of the teeth are tender on percussion.

The following *Previous History* was elicited from the patient, to whom I am indebted for a careful *résumé* of his case, from which I quote.

Six years ago, during the winter of 1880-81, had pleurisy with effusion three times in rapid succession, the illness, in the first instance, being attributed to getting wet through at football.

On 7th July was so far recovered that he was ordered change of air, and, by advice, went a sea trip to the Mediterranean, deriving great benefit, and gaining in strength and weight. Whilst crossing from Malta to Marseilles he encountered heavy weather, but remained on the deck all day. On arriving at Marseilles, about the middle of August, he found, for the first time, that his face was a little swollen on the left side; but, feeling well in himself, and having no pain, he stayed a week sight-seeing in that town.

On 23rd August he began to feel out of sorts, and the face becoming painful, he started for home, reaching Paris on 24th, the pain getting better just before his arrival. On examining his mouth, he found that an abscess had burst just above the left canine. He reached London on 30th August, feeling quite well again.

From this time till April, 1886, a period of nearly five years pus collected at varying intervals, and was from time to time evacuated by incisions in the neighbourhood of the canine tooth. During all this time he suffered little or no pain.

From time to time he sought advice; but, though suspected and searched for, dead bone was never detected with the probe, and he was advised to wait, as the surgeons saw no indications for interference.

In April he broke down again through overwork and a slight attack of rheumatic fever. The abscess, during April and May, continued discharging freely, and in July the face swelled again, although he had no pain. By the end of the month the swelling and discharge had quite subsided. About this time the patient noticed that he was cutting the left upper wisdom tooth.

In the middle of August a small, hard lump, about the size of a threepenny piece, with a smooth, rounded surface, appeared below the antrum and above the second molar. This lump rapidly approached the surface of the cheek, but was perfectly painless. Fearing that the abscess would burst externally, the patient made an incision inside the cheek, a free discharge of pus taking place.

In the middle of September he consulted Mr. Thos. Smith, who sent him to me, saying he thought he could feel a stump behind the second molar. The notes I made on the case on this occasion I have already read.

I could not at this time trace any *dental cause* for the disturbance, and could not advise the removal of any teeth as likely to cure the existing condition of affairs ; but I was of opinion that the wisdom tooth would be better away, as it was irritating the cheek, and *might possibly* be at the bottom of the mischief. I saw Mr. Smith the same day, and suggested that the sinuses should be explored. In this Mr. Smith concurred, and on 22nd, the patient being placed under chloroform, Mr. Smith forced a director into the anterior opening, and at once came down on dead bone (probably the anterior wall of the antrum), which, however, was not loose. The sinus was laid freely open and plugged with lint, and the patient put to bed. Two days after this the patient was allowed to return home, and he continued to plug the wound for himself. In a short time (about twenty-one days) he began to find difficulty in opening the mouth, and could no longer feel dead bone with the probe. On 27th October another abscess burst into the mouth behind the molar teeth the stiffness of the jaw being at once relieved. A probe passed into this newly formed sinus came upon dead bone. The abscess in the cheek now became very painful, and during the first week in November, when away from town, he had it opened externally, some very foul pus being evacuated. The discharge about this time became very copious and watery, especially when food was taken into the mouth. The wisdom tooth was now pressing against the swollen cheek and causing ulceration, and, at Mr. Smith's request, he saw me again on 19th November. I then removed the wisdom tooth, which showed only slight congestion of the anterior surface of the extreme apex of the fang. On this occasion I also found a small, soft swelling on the palatine side of the *first molar.* This I incised, and at once came down on what proved to be the palatine root of the first molar. The wound was plugged with lint. On 25th November the first molar was found to be loose, and somewhat tender on percussion, the whole length of its palatine root being bare. I removed the tooth, and found the whole space between its three roots filled with firmly matted inflammatory tissue, all traces of a bony septum being wanting. The socket, which was formed by rough carious bone, was plugged with lint soaked with aromatic sulphuric acid, and was daily dressed by the patient in the same way. On 1st December the anterior root of the second molar was exposed in the wound, and on the 10th bare bone could be felt *around* the roots, whilst *between* them the same tough, inflammatory material presented. This tooth was removed, with the above soft tissue, which was firmly adherent to the roots on all sides. The aromatic sulphuric acid dressing was persevered with by the patient until the first week in January, when, as no rough bone was felt, simple lint was packed into the cavity, in order to ensure its granulating from the bottom.

By the end of the month the wound in the mouth had nearly healed, and the salivary discharge from the *external* wound had ceased. The cheek was still very much thickened, and of the same deep colour as before. The abscess on the cheek discharged very little, but the skin over an area about the size of a shilling was not adherent to the subjacent tissues. I scraped the adjoining surfaces of this pouch with a sharp, spoon-shaped excavator, and attempted to keep them in contact by a pad of lint, held in place with strapping. A aweek fterwards there was very little improvement, the skin being still non-adherent, and it was evident that the present contrivance for keeping the surfaces in contact was not very satisfactory, as, owing to the movement of the cheek in speaking and eating, the strapping soon worked loose. A small piece of solid nitrate of silver was inserted into the sac, and, as far as practicable, applied to both surfaces, lint and strapping being applied as before. In the course of a few days a Steno's duct compressor was procured, and, after the surfaces had been again refreshed with the excavator, a pad of lint was placed over the wound, and the compressor adjusted. The pressure, at first, was rather painful, but the patient managed to wear the instrument, without much discomfort, for a week; at the end of which time (February 26) the non-adherent surface of skin was reduced to the size of a sixpence. The surfaces were again refreshed, and the pressure applied.

There is no history of syphilis; but, although the patient has shown no previous symptoms of struma, several members of his family have the strumous diathesis fairly well marked.

I saw the patient again on Friday last (March 4). The wound in the mouth has entirely healed, with the exception of a rather deep sinus leading upwards from about the centre of the position originally occupied by the second molar. No dead bone or rough surface could, however, be felt with a probe. The action of the compressor on the external wound has been very satisfactory, and only just the callous edges in the line of incision remain ununited. The substance of the cheek has resumed its normal condition.

The main point of interest in this case centres in the question, What was the origin of the mischief?

Were the teeth, or any of them, the cause of the trouble, or were they only subsequently involved? Was the case one of caries of the jaw, of idiopathic origin; or was it consequent upon the inflammatory disease (pleurisy) in the same way that we not unfrequently find necrosis after the exanthemata; or was it the result of exposure to cold on board ship during the passage from Malta to Marseilles, at which time the first symptom was noticed? It is upon these points that I should like to hear the opinions of members who have had longer and more varied experience.

The treatment of the carious surface with aromatic sulphuric acid was suggested by the successful use of that agent in Pyorrhœa Alveolaris.

INTERNATIONAL CONGRESS.—No authorised programme or lists of officers are yet published; it appears that this unfortunate delay has arisen out of a misunderstanding among the American officers, and that something definite will shortly be given to the profession. Meanwhile, "time flies."

British Journal of Dental Science.

LONDON, MAY 15, 1887.

THE USE OF THE DENTAL ENGINE BY DENTISTS.

DENTISTS are not a healthy body of men. On all sides there are pitfalls laid against the establishment of good health and its preservation. For to be a dentist, a man must work early and late; he must, further, do most of his work whilst in a cramped position, and maintain prolonged efforts interfering greatly with the due performance of respiration. In the hundred and one nice manipulative efforts that are daily required at the hands of the dentist, it becomes a second nature to him to hold his breath. He learns that the full vigour of his expiration must result, more often than not, in his blowing into his patient's face—a result alike untoward in its immediate and remote effects; and so he accustoms himself to breathe softly, his chest becomes inured to this mischievous state of things, and he thus is placed in the position of an individual who inherits or acquires lung disease, and predisposes himself to pulmonary trouble. But the dentist's dangers do not end with the risk he runs by cramping his chest, and inhaling the noxious exhalations from the lungs of his patients, themselves often afflicted with diseases which physicians nowadays regard as communicable from individual to individual by the breath; he habitually compels his muscles to sustain a strain which, sooner or later, tells upon his nervous system. In no sense can it be reasonable for a dentist to employ himself as a source of motor power. In pre-historic times, cave-dwelling dentists, if such beings existed and extracted afflicted molars with a deft blow from a flint-head, one could imagine the employment of a human motor, but in the nineteenth century of grace such a thing is an anachronism. The use of a personal motor in driving the dental engine, coupled as it is with prolonged standing and constrained attitude, induces that terrible malady, ,‘ Dentist's Leg," and pre-disposes to spinal trouble of an even graver import.

If dentists only appreciated more the fact that by working their own engines they were doing themselves a direct injury, we feel convinced we should hear less of men-motors. Of course, an alternative is not, in all cases, an easy matter at which to arrive. Electrical motors, water motors are numerous enough, to say nothing of hot-air motors and gas motors; and it is probable that what would answer in one man's workshop would fail to give satisfaction in another's. There are very many excellent motors now in use, and were there a greater demand for them they would soon be further improved, and their present drawbacks removed. At recent meetings of the Odontological and Odonto-Chirurgical Societies, various motors have been brought forward, and opportunities thus afforded for members of these Societies of seeing and testing the respective merits of the various devices shown. Water-motors are, many of them, open to objection, on account of the high pressure needed in order to drive them properly; so that, in country places, and often in towns, it becomes a matter of difficulty, if not an impossibility, to obtain sufficient force. But this objection does not apply to all water-motors.

Again, electrical motors, although exceedingly "taking" and pleasant at first, do not—if we may accept the verdict of many who have abandoned them, after giving them a prolonged trial—keep up their standard of excellence. In a word, they need constant care and attention, and are prone to get out of order and to fail at the critical moment. In like manner, objections are raised to hot-air and gas motors, but it is not within our present scope to deal with the various disabilities of motors; whatever they are, they are certainly better to be borne than impaired health and forced retirement from professional work, which so often falls to the lot of dentists. Taken at the best, the life of the average dentist is a toilful and an unhealthy one, environed by risks, often so hidden as to be hardly suspected until the danger is present and pressing; and so that life should, as far as may be, be shielded from additional peril, it would prove a great boon if an opportunity were taken, such as is afforded by some general gathering of dentists, to collect together and hold a demonstration upon the various forms of motors, so that the question could be well threshed out as to their respective merits or defects, and their mode of working carefully explained by competent persons. Practical matters of this sort are of the utmost importance to the profession at large; but, unfortunately, they are too frequently jostled out of the programme by some quasi-scientific matter which makes up in pretention for its lack of usefulness. Let dentists be as scientific as they like, but let them not be so at the expense of practical perfection.

THE MEDICAL AND DENTAL REGISTERS FOR 1887.—Both the Registers have been subjected to the most thorough revision, and no efforts spared to render them complete. In the case of the "Medical Register," a Circular of Enquiry was sent to every registered practitioner at the beginning of the year, and in November voting papers were also sent out in connection with the election of direct representatives on the Medical Council. As the result of these enquiries, a a great number of inaccuracies of address were discovered and corrected. In the introductory part of the volume, the new "Medical Act (1886)" has been (with the older Acts) printed for the information of the profession, and a table has also been added, showing the qualifications in sanitary science which have become registrable under this new Act. In addition also to the other statistical information usually given, a table is introduced, showing the number of practitioners resident in each division of the United Kingdom. To render possible more ready reference, the contents of each page, in both Registers, is now indicated by initial headings. In the case of the "Dentists' Register," care has been taken in the introductory portion to make clearly evident in what respects the enactments of the "Medical Act (1886)" have modified the provisions of the "Dentists' Act (1878)."

The Registers for 1887 tell us many instructive things. For example, we learn the sad fact that several persons who are well known as practising dentistry, and who hold surgical diplomas, are not upon the Dental Register. These are hard times, we know, but the Registration fee is not exorbitant, and we opine the liberal executive of the B.D.A. would be willing to assist indigent surgeons who, anxious to pursue their calling as dentists like honest men, are yet unable to face the Registrar. It is further matter of regret that many distinguished dentists, who hold surgical diplomas over and above the L.D.S., omit to have these inscribed. We welcome some names of veterans, who have had the moral courage, after many years of non-registration on the Dentists' Register, to come forward, and, by their registration, give the weight of their adhesion to the cause of right. The following figures are interesting :—there are L.D.S., Eng., 421; L.D.S., Edin., 49; L.D.S., Ire., 404; L.D.S., Fac. Phys. Surg., Glasg., 58; persons holding a surgical, but no dental qualification, 25 ; persons in *bona fide* practice of their profession before 1878, 4,243 ; making a grand total of 5,200 names. We also have four D.D.S.'s of Harvard, and three of Michigan. There are 374 students' names entered upon the Students' Register. We thus see that of practitioners holding a dental licence, 8 per cent. are upon the roll of the English College, 7 per cent. upon the Irish, .9 per cent. upon the Edinburgh, and 1 per cent. upon the Glasgow.

PROFESSOR VICTOR HORSLEY AT THE ODONTOLOGICAL SOCIETY.—Mr. Victor Horsley, F.R.S., Brown Professor of Pathology, is announced to give a lecture at the above Society at its next meeting. Mr. Horsley, whose researches on the surgery of the brain and nervous system have already won him a place among the leading surgeons and scientists of the day, has upon several occasions resected the ganglion of Meckel, and has been able to alleviate the unendurable agony ef neuralgia by this most difficult and delicate operation. As Mr. Horsley will deal with neuralgia and its surgical treatment, he will trench upon the domains of the purely practical and useful, and so will, doubtless, find a very large auditory of his paper.

ACONITINE IN NEURALGIA.—In the *Gazette des Hopitaux*, M. Guesdon has published a note on the effects of aconitine in neuralgia. Aconitine diminishes or suspends the functional activity of the nerves of sensation, and, while producing anæsthesia, it gives steadiness to the circulation, diminishes the calibre of the capillaries, and lowers the temperature. The action of the drug is sure and regular, but, owing to the powerful effect which it produces, it should be given in small doses at long intervals. A safe and convenient way of administering the medicine is in the form of pills, made up according to the formula of Dr. Moussette, of Chauny. Each of these contains one-fifth of a milligramme of pure aconitine and quinine. On the first day the patient takes three pills, one in the morning, one at noon, and one at night. If these have no effect, one pill may be added each day until six are given in the twenty-four hours, this dose being maintained until the pain ceases. Should diarrhœa home on, the dose must be reduced.

THE COCAINE DISCUSSION AT THE ODONTOLOGICAL SOCIETY.—At the last meeting, held upon the 2nd, ult. Dr. Cunningham, of Cambridge, introduced the subject of Cocaine by a valuable paper upon the physiological action of that drug, and was followed by an elaborate and able paper by Mr. Hern, who undertook, what we may perhaps call the clinical side of the question, giving alike his own experience and that of others with regard to the employment of cocaine in dentistry. The length of the papers precluded the possibility of any subsequent discussion, and it was, therefore, decided to adjourn further consideration of the question until November next. The general impression left upon the mind, after hearing the papers, was that cocaine, although valuable in some ways, is too uncertain in its action, and too liable to produce dangerous symptoms, to be generally adopted. Mr. Hutchinson made the practical suggestion that the time between now and November should be employed in carefully testing cases of cocaine, and scertaining how to obviate its dangers and remedy its bad effects.

REFLEX ACTION OF THE OLFACTORY NERVES UPON HOSE OF THE ALIMENTARY CANAL CHECKING SICKNESS.—Young children, in whom the senses are not dulled, are very profoundly impressed by the use of strong perfumes. The pains and irritability caused by teething are forgotten when a delicate perfume is presented to the infant's nostrils. Mr. Watson Smith has further found that vomiting in children will, in the same way, be checked if a strong perfume be brought to the little patient's nose. In a case of dysentery which he quotes, he found it impossible for the child to retain on its stomach food or medicine; so, acting upon the suggestion that powerful odours seem to inhibit nausea, he adopted the following ruse, commencing with some simple article of diet, and administered it with a spoon held with a handkerchief upon which a delicate perfume had been placed. The effect was excellent, and, in reply to a question, the child said that the taste was very good. After a while some ipecacuanha medicine was taken and administered in a similar way, first desiring the patient—a little boy of three and a half years of age—to notice the pleasant smell of the contents of the spoon. The medicine was now taken without difficulty; it was followed by a spoonful of milk, administered in the same way, and remained on the stomach. After this, the persume was only allowed to accompany the ipecacuanha, and no difficulty was afterwards experienced.

A HINT FOR IMPRESSION TAKING.—The above seems likely to be of practical service to dentists, when dealing with those tiresome cases of persons who retch and are nauseated as soon as the impression tray is placed in their mouths. Scented wax is, of course, commonly used, but the development suggested above is not of such frequent application.

COMMUNICATION OF DISEASE BY DENTAL INSTRUMENTS.—An itinerant tooth-drawer visiting Toronto, extracted teeth gratis all round. A few days after he had commenced operations, seven cases of diphtheria developed, and as they occurred only among those in whom teeth had been removed by the itinerant, and as there was no other case of the malady in Toronto at the time, the presumption is that the tooth forceps inoculated diphtheritic virus into the unhappy patients. It is well known that diphtheria is associated with a micro-organism, and there is, therefore, little doubt that persons in depressed health would be capable of inoculation in the manner suggested. There is, perhaps, no greater crime than for a dentist to use dirty instruments; the smallest speck of blood may swarm with the germs of the most deadly disease; these, inserted into a freshly-cut wound in the gum, would at once pass into the blood, and the patient probably die. It may be said that lots of dentists are dirty in their habits, and yet we don't hear of these dire calamities. If we do not, it is only because the medical men who are called in to treat the case, call it poisoning of the blood, and say the drains are out of order.

ANOTHER COCAINE VICTIM.—A victim of toothache had recourse to cocaine; some cocaine 10 per cent. was injected, relief following. The next day three minims of a 10 per cent. failed to give ease, so four minims of a 20 per cent. were injected. In five minutes the patient became restless, and inclined to vomit; formication was next felt in the left hand and arm, which rapidly spread to the right side. Rigidity of the fingers, arms, and legs followed, with slight opisthotonos. The pulse became rapid and feeble, the countenance livid, the extremities cold, the muscles of the face and jaws firmly contracted, while a profuse sweat broke out. Sinapisms over the heart, brandy, aromatic spirit of ammonia, and the inhalation of a few drops of chloroform were employed, and, after an hour, the patient began to rally. In four or five hours, although drowsy, he had pretty fully recovered. This case is reported at length in the *Australasian Medical Gazette* for August of last year; it is alike instructive and interesting. We shall, however, have more to say upon the subject of cocaine and its victims at a later date.

Deaths in the Medical Profession.—The deeply regretted death of Dr. Wilson Fox, late Physician to Her Majesty the Queen, and Senior Physician to University College, brings home to us how alarmingly active death has been among the ranks of our leading medical men. Guy's Hospital alone has lost some of its most brilliant officers in Drs. Hilton Fagge, Walter Moxon, and Dr. Carrington; Dr. Alfred Meadows died but a week or two since, and now Dr. Wilson Fox has passed away.

Alveolar Hæmorrhage.—Mr. Newland Pedley has had the opportunity of seeing two cases of this kind at Guy's Hospital. In one case, in which bleeding had been severe on several previous occasions, the patient—a man—was treated for one week with perchloride of iron in a mixture, then admitted as an in-patient, his tooth extracted, and the socket plugged at once with cotton wool soaked in Tannin. Pressure was obtained by a pad of lint, and the jaws kept closed by tying a handkerchief over the head. The oozing of bright blood occurred on the day after the extraction, but no serious bleeding occurred. The patient was fed upon slops. In the second case, a hæmophile with a typical history gave some trouble, owing to bleeding after tooth extraction. This patient was admitted as an in-patient, treated with perchloride of iron and magnesia sulphate, fed on slops, and had the socket plugged like the other case; he did well. Mr. Pedley contends these cases prove hæmophiles should be taken as in-patients before tooth extraction is attempted. We suppose no one would question the position; but, unfortunately, the victims of this terrible condition seldom tell of their bleeding tendency, and frequently do not even know of it themselves. The preliminary treatment of such cases with iron is purely one of empiricism, and can, we opine, be only of value when antecedent hæmorrhages have occurred and produced a watery condition of the blood, for Hæmophilia, from a pathological point of view, has nothing to say to Anæmia, being, it would appear, due more to an arterial than a blood malformation.

THE TREATMENT OF FALSE TEETH IN THE ŒSOPHAGUS. —In a leading American contemporary, we read that some unhappy man had the misfortune to get his artificial denture into his œsophagus. It lodged in the usual place, the narrowing just behind the cricoid cartilage, and consequently produced dyspnœic distress and great anxiety. The man was taken to a "physician," who, after failing to remove it by mechanical means, actually (as we are told) committed the enormity of giving the ill-starred victim an emetic! After this, the patient—who, happily, was not killed—went to another "physician," who, not having a probang, extemporised one, and, of course, got the denture out easily enough. We quote the case to emphasise that, under no circumstances, should such treatment be followed; it is the grossest act of bad surgery possible, and may easily lead to the most disastrous consequences.

MIRROR-TOPPED SYPHON TONGUE HOLDER.—Dr. D. Genese, of Baltimore, has, according to the *Southern Dental Journal*, made a useful addition to the dentist's armamentarium. It enables the dentist to have the cavity ready for plastic fillings before mixing the material, and not to hurry the manipulation, thereby destroying its working properly by too much haste while the material is being introduced, and it *leaves both hands at liberty*, without the fear of the tongue getting in the way. It is made of German silver, nickel plated, with three sizes of depressors. It is easily kept clean, and is rapidly handled. It can also be worked with a ball syringe, but a flow of water is preferred. It will syphon a pint per minute, if desired; and, by the arrangement of the inlets, no undue pressure is felt on the soft tissues or the tongue during the operation. Its capacity has been tested in many cases, in one of which the patient retained it in the mouth from commencement to finish of three large crown fillings, taking two hours, during which time the head was not removed from the rest of the chair. For operations in children's mouths, nothing can equal its usefulness in certain cases. This enables dentists to facilitate hitherto difficult operations, making them easily and quickly accomplished with better results than with the old method of operating in small mouths with excessive flow of saliva.

Common Sense in Dental Practice.—"Call things by their right names. Have an idea when you speak or write. Express that idea in the shortest and clearest manner. Never lose sight of the idea till it is expressed. Have an end in view when you practise. Be able to state it if asked. Have a reason for every method you employ. Let that reason be one that your intelligent patient can comprehend. Pursue no circuitous modes of practice unless none direct will meet the case. In your investigations, keep before your mind some practical end to be better attained in consequence of your study." These remarks, made by Dr. C. A. Marvin, in the *Odontographic Journal*, are very practical, and appear to us worthy the perusal of many of the members of our profession, both here and in America. It is refreshing to find a man advocating taking one's patients into one's confidence; it is unusual and useful.

Broken Blocks.—C. C. E., in *Ohio Journal of Dental Science*, says: "I am positive the only cause that ever broke a block is pressure—either too much rubber was used, the flask closed too suddenly, or at too low a temperature; or lastly, the most frequent of all causes, neglect to remove all wax from the surface of the blocks. If any wax is left on the face of a block, there will be a space where the wax is melted out, and when the rubber is placed in behind it, the block is almost sure to give way. Have the plaster set perfectly to the face of the teeth, and you will have no more broken blocks—at least, that has been my experience. I saw in one of the journals, not long ago, where some one tried to explain that it was 'the sudden pouring of hot water on the blocks that did the damage,' citing, as an example, that 'his wife never poured hot water on glassware without expecting it to break.' I will say to this gentlman, if he will watch his wife the next time she washes dishes he will find that she pours the hottest of water on porcelain with the greatest impunity, and if there are any glass teeth in the market I have failed to see them."

Abstracts of British & Foreign Journals.

SOUTHERN DENTAL JOURNAL.

SALICYLIC ACID FOR ABSCESSES—ACETATE OF LEAD FOR TREATING ROOTS—WAXED BROACHES FOR HOLDING COTTON.

By J. F. Griffith, D.D.S., Salisbury, N.C.

A lady in bad health for several months, suffered from so-called tooth-ache, and was treated medically for neuralgia. As the patient got no relief, further advice was sought. Upon examination, abscess of the antrum was diagnosed and treatment recommended through the socket of the second molar, which, being intact, had to be removed. To this the physician objected, stating that the patient could not afford to lose any blood.

A year later, the same surgeon was called in, and found the patient in a precarious condition. The cheek and eye on the affected side of the face were puffed and swollen, and the odour very offensive. The molar (2nd) was at once removed and an opening made into the antrum, which was cleaned of pus.

The following treatment was followed: A solution of salicylic acid, syringed into the cavity through the molar socket twice a day. On the second day there was a marked improvement; on the fourth the discharge from the nose had ceased, and there was but little odour. On the twelfth day patient was dismissed cured.

The formula used was—

Salicylic Acid, thirty grains.
Borax, twenty grains.
Water, three ounces.
Mix.

As an antiseptic and disinfectant it is a powerful agent, and successfully employed in the treatment of pulpless teeth.

It will sweeten and make pure the inside of a tooth, and appears to thoroughly disinfect and render completely inert any animal matter that may possibly be left in the canal.

In attempting to remove a pulp from a root that crooked near the end the writer broke off a nerve broach, the broach twisting off at about the angle or beginning of the crook. It was impossible to get it out by any means at hand, so salicylic acid was applied heroically for two days, and sealing it up in the interim. This was ten years ago; no complaint has been made. The root was filled with red gutta-percha.

There is another remedy used by the writer, with varied success, in the treatment of "dead teeth." It is acetate of lead. After removing all putrescent matter from the pulp canal by syringing carefully with tepid water, moisten a twist of cotton on a smooth broach and take up a small quantity of the acetate of lead finely pulverised. Allow a minute for the dampness of the cotton to dissolve the lead, then wipe the canal thoroughly, after which substitute floss silk for the damp cotton, and wipe up as much powdered lead as will adhere to the silk and pack loosely in the canal. Seal or not, but remove in two or three days, or longer. One application is generally sufficient. Dry the canal and proceed to fill in the usual manner. He uses a good qualitity of prepared gutta-percha, warming it and incorporating a little of the powdered lead in the gutta-percha while soft, then shaping it to conform to the canal to be filled. The idea is to have the presence of the agent, and yet have the canal solidly filled. The following furnishes a reliable vehicle for carrying medicaments to the very apex of a root: Press the end of a smooth nerve broach on a piece of beeswax, about one-fourth of an inch from the point; this will adhere to the instrument, and the fibres of cotton or silk will become attached to the wax, and by giving the broach one or two turns between the thumb and finger you will be enabled to carry the cotton or silk wherever the instrument will go without the usual slipping.

COTTON POINTS FOR CLEANING TEETH.

By G. B. Clement, D.D.S.

It is the practice with many, after scaling the teeth, to use wood polishing points in "Porte polisher," with pulv. pumice stone to finish off, and leave a smooth surface. Some use in connection the "bone centre tooth wheel," and also the "soft rubber polishing cup." The writer thinks the following is a better method. Take any shape "wood point," and after you get it all ready in the engine, take a small piece of absorbent cotton, lengthen out its fibres, and while the "wood point" is revolving in the engine, wrap it tight with the cotton. Now moisten this a little. It can be used for polishing gold fillings.

THE INDEPENDENT PRACTITIONER.

THE SURGICAL AND THERAPEUTIC TREATMENT OF CARIES AND NECROSIS OF THE ALVEOLAR PROCESS IN MAN.

By A. W. Harlan, M.D., D.D.S., Chicago, Ill.

Caries and necrosis of the alveolar process are observed at all ages, but chiefly after puberty. If disease occurs early, it attacks inmates of foundling asylums, workhouses, orphan asylums, or the very poor, where infection and contagion float in the air.

One principal cause is disease resulting from the death of the pulp; others from syphilis, the exanthemata, phosphorus, arsenic, excessive wedging, bungling regulating apparatus, salivary concretions, osteitis, periostitis, osteomyelitis, ill-fitting partial dentures, and sepsis. The death of the pulp, its subsequent decomposition and abortive attempts to remove it, and the later unsuccessful efforts to fill the root, are the principal causes of caries of bone when ignorance or neglect of proper treatment results in acute inflammations with their sequences. An alveolar abscess never occurs at the apex of a root, or leading from it, unless there be a coincident excavation of bone around it, or a perforation of the process in its near proximity. Occasional cases of perforation of the antral cavity, burrowing of pus into other regions, as on the neck, the chin, the nasal cavity—between the palate bones, or even through the lower maxillary—have been reported with concomitant caries of bone. The greater number of cases of caries are found in the neighbourhood of affected teeth. In chronic abscesses from pulpless teeth a gradual but slow solution of the margins of the process making the outline of the original destruction is seen. In time this may be so marked that pressure of the finger will bring the gum in contact with the root. The edges of the alveolar process in such cases are not necrosed; they are simply carious. Ultimately such teeth, without treatment, become useless. Many well filled teeth are left to discharge pus into the mouth daily, through ignorance, carelessness, or timidity about operating surgically. There are many more cases of caries of bone than of necrosis around the roots of teeth. The practice of soaking wood, cotton and silk, or incorporating antiseptics with paraffine, shellac, gutta percha or other plastics—in the hope that if the filling does not reach the apex of a root, the antiseptic will for ever remain as a guard against putrefaction—is delusive, unscientific, and demonstrates the lack of a respectable knowledge of the lasting property of an antiseptic. Caries of bone, from whatever cause arising, is to be treated by dividing the gum in any approved manner, and boring into the apicial space with clean instruments, and under antiseptic precautions. The cavity being cleansed and packed with antiseptic dressings, these are subsequently replaced with balsamic or non-irritating coverings. The prophylaxis is proper removal of the pulp, and a well-defined system of root filling with a material non-metallic, innocuous, and well adapted for the purpose—gutta percha. It is admitted that many unfilled teeth develop abscesses around their roots, and caries of the process is seen from inflammations of the gums and other causes around teeth with living pulps, as in phagedenic pericementitis, or pyorrhœa alveolaris. Tents of cotton, felt or gauze packed between the gums and the teeth are rarely requisite pending the reformation of tissue from such trivial operations. Necrosis of the alveolar process, although less frequently met with than caries, is troublesome. Necrosis of the alveolar process at times has followed very trivial causes. By necrosis is meant death of the bone *en masse*. A case is cited of a well-built woman, weighing one hundred and sixty pounds, reduced to a pitiable state of nervousness, losing more than thirty pounds in weight in ten days, from the forcing of septic matter through the root of a bicuspid tooth. The outer plate of the alveolar process from the first molar to the median line became necrosed from the retention of pus in contact with the bone, and in due time it was removed without loss of a single tooth. Irresolution or timidity in operating promptly in the beginning of peridental inflammation, which has its origin in or near the apical space, is most dangerous. There are many cases of necrosis of the alveolar process not due to causes arising from the death of the pulp, but many are due to it. Nearly every case of this kind occurring in the mouths of children after the sixth or seventh year is due to defective teeth. It matters not whether necrosis be due to traumatism, sepsis, microbes, an imperfectly filled root, an impacted tooth, or faulty adjustment of a splint. We must discover the cause, not so much for the aid it will afford for treatment, but to prevent future pain, discomfort, or deformity, for others. Good drainage is the first consideration, after which sustention of the vital forces: these having been looked after, cleanliness and consecutive attention to details follows. It is often unwise to remove portions of necrosed bone, even though irritating to the soft tissues, until the teeth are likely to be retained in place by new formations. It is better to allow the sequestrum to be taken away in fragments, rather than lose teeth, or even more living useful bone.

Dr. Atkinson says: "The prevailing methods in surgery of treating caries and necrosis by expectant treatment and drainage should no longer be resorted to. The portions already dead, or greatly debilitated, should be thoroughly removed well up to the healthy territory—securing a pocket to receive the pabulum, out of which to attain reproductions by what has been called 'first intention.'" This teaching is founded on correct surgical principles. The attempt should be made in all cases to save useful teeth by wiring them or by the adjustment of a metallic perforated skeleton splint, which will securely hold them in place until the new formations are sufficiently dense to maintain them in position unaided. This is a matter of great importance.

SPECIAL THERAPEUTICS.

Methods of practice are varied to suit the case, and the remedies used or proposed from time to time are sufficiently numerous to meet the wants of the most exacting. The principles of local treatment may be summarised as follows: Premising that the root has been filled if indicated, the surgical wound may be cleansed with peroxide of hydrogen, a ten per cent. aqueous solution of resorcin, a three per cent. solution of aseptol, or equal parts of a one in one thousand solution of corrosive sublimate and H^2O_2. The wound should then be packed with cotton sprinkled with deodorised iodoform (for this, use crystals of thymol, finely powdered coffee or oil of cinnamon three drops to ʒss.), or the cotton may first be moistened with pure terebene. As a substitute, use iodol dissolved in hot oil (ethereal or a fixed oil), or dip the cotton in terebene, and powder the surface with iodol. These dressings need not be changed daily. If extraneous matters have been kept from the wound it must not be irrigated with escharotic or irritating lotions. If the whole sequestrum in necrosis is not removed, the parts must be kept clean by the daily use of any of the above-named agents, the dressings only being indicated after operations on carious or necrosed bone, until complete restoration of the parts has resulted.

DISCRIMINATE USE OF GOLD.

By S. B. Palmer, M.D.S., Syracuse, N.Y.

Filling teeth involves two principles. First, the operator needs to be a master mechanic, so far as the preparation of cavities and the manipulation of gold is concerned. Second, he should understand the relations of gold to the varied conditions of tooth-structure, in order to anticipate probable results. "From first to last," Dr. Palmer asserts, "there was no demand for plastic fillings, and no excuse for failures." Good normal teeth usually contain about one-third of organic or animal matter, and two-thirds of mineral or inorganic matter. It so happens that about this proportion of inorganic, non-conducting material, reduces vitality to a degree below severe inflammatory action, at least below the danger of devitalisation from such action; consequently, instead of destruction of the surface in contact with the filling, the excitement caused by thermal changes stimulates the bone-producing agents, and increased calcification is the result, by the same process witnessed in the grinding down of the oral teeth by attrition. We often find the walls hardened beneath gold fillings, but we look in vain for this process in poorly calcified teeth, unless some less-conducting material lines the cavity.

In poorly developed teeth, such as in a child from ten to fourteen years of age, with numerous lateral cavities in the incisors. Such teeth are soft, and far below the average. The presence of decay indicates the true condition. They resemble cartilage nearly as much as bone. Gold is an unsuitable material for filling this class of teeth. We have in this class an utter change of conditions, which, if treated like those already noted, would give opposite results, and which in time would be recorded as failures. This is because in the fully matured tooth the organic matter is given as twenty-eight parts in one hundred, against seventy-two parts of lime, etc. Thus the pulp and spaces occupied by the vital fluids are so contracted and protected, that, unless cavities reach very near the pulp, thermal changes cause only temporary inconvenience.

With the poorly calcified organ, the large pulp and increased vitality renders the preparation of a cavity painful, and the packing of gold exceedingly difficult. Such operations are followed by thermal disturbances. Vitality will endure a given amount of irritation, excitement, or inflammation. Beyond a certain strain the work is abandoned. Devitalisation first occurs in the dentine, merely upon the surface in contact with the filling. It is first manifest to the eye by the blue or grey shade reflected through the enamel. When disintegration sets in, the decomposed dentine becomes a conductor and positive element, the gold being negative.

With this understanding of the two extreme conditions, it will readily be understood why former discussions upon the "Electro-chemical Theory" seemed so conflicting and unsatisfactory. The opposition presented the one condition most favourable to overthrow the theory, which was substantially this: "Tooth-bone, being a non-conductor, is not an electrolite, therefore, is not decomposed by galvanic currents." On the other extreme, abnormal tooth-bone, that in which the organic matter predominates, *is* a conductor, and, like the portions of animal matter deposited from food, as well as the oral fluids, is an electrolite, and is decomposed, the gold in contact being the negative element.

One great hindrance to dental progress is the lack of discrimination. Dr. Palmer's practice is based upon the following conclusions: That gold may be used with safety in all teeth of normal structure and density; also in devitalised teeth of like structure, even though the colour might indicate a lower grade. For teeth answering the above conditions, all things considered, gold is superior to all other filling materials. Gold should not be packed upon highly sensitive dentine, as thermal changes occur, which may be avoided by filling with gutta percha, even for a few days or weeks. Gold should not be malleted into teeth while sensitive from recent wedging. A retaining wedge of gutta-percha, worn from six to eight days, removes all trouble. Gold should not be inserted or packed upon dentine so poorly calcified that the excavator fails to give the sound and sense of cutting bone, because the surface in contact with the plug will lose vitality, decompose, and eventually turn dark. Gold should not be malleted upon dentine below normal structure. Bruised dentine will decompose, and not harden, by calcification under a filling.

The utility of gold may be greatly extended by the lining of cavities with a varnish, and by combination with various plastic materials, through methods generally known and practised.

Speaking of tin and gold, it applies to filling large cavities, generally in molars, as a substitute for amalgam, the object being to form an alloy of gold and tin by chemical action upon the surface of the plug. Such fillings resemble amalgam in colour and hardness, and do not shrink or discolour the dentine. To obtain an alloy, it is essential that the two metals be evenly distributed. There may be an excess of gold at any point without injury, but the tin foil must not exceed one or two thicknesses of No. 3 foil, for the reason that the molecular action desired is limited near the surface of the two metals in contact. An excess of tin greater than can be fused with the gold is chemically dissolved, leaving a corresponding furrow or pit in the plug. This union or combination depends upon moisture. That is, a filling well packed in a good cavity remains the same, except upon the surface. If it be upon the grinding portion, where the filling is self-cleansing, there seems to be little difference from a first-class tin filling, but on approximate, buccal, or lingual surfaces, especially where little care is bestowed, the surface of the plug becomes hard and indestructible, which renders this preparation of great value for submarine operations. He prepares the material for this filling by placing a sheet of No. 3 tin upon a No. 4 sheet of gold. This will usually fill a cavity. If thought to be sufficient, cut through the leaves, and place the gold of one-half upon the tin of the other, thus giving four thicknesses, from which blocks or ribbons can be cut, the latter being rolled into cylinders. This preparation makes an excellent foundation for large gold fillings at the cervical borders of approximate cavities, where the matrix can be used, as there is no danger that the tin will be dissolved by chemical action. Cutting the foil unites the edges, and secures the position of the layers while packing.

The second method is applicable for any filling in the posterior teeth, and much better than amalgam against frail, transparent walls of bicuspids. Many gold fillings fail because the contact is not absolute when the filling is completed. Patients prejudiced against amalgam like to compromise between the expense of amalgam and gold. This can be accomplished by the use of tin and gold. The greatest benefit to the operator consists in the saving of time. This method applies to teeth of normal structure, where there is no occasion for the antiseptic properties which are afforded by tin and amalgam; consequently, the gold is intended to cover the tin, and, of course, the cavity would be lined with gold. The preparation of material is as follows: Cut No. 4 gold into strips from three-fourths to one inch wide; also prepare No. 3 tin foil in the same manner. Roll the tin into a rope and untwist it, and this will leave a pliable roll of tin. Anneal the gold, taking care not to melt it. Place the gold upon a napkin, and the roll of tin upon it, bring the edges of the gold up over the tin and lap them, and the tin will be completely covered. This may be used as cohesive gold. Pellets may be made by cutting the gold into squares of about one inch, and making a loose pellet of tin; anneal the gold and enclose the tin in it. With either rope or pellet, fill as much or little of the cavity as desired. Cohesive gold may be added to finish, and, when properly done, the appearance is that of a first-class cohesive gold filling, and much better than the latter, as the gold is more perfectly pressed against the walls. One thing should not be overlooked when the tin has been used. If cohesive gold is to be added, let the first piece be of one or two thicknesses of annealed gold, packed with an instrument of four well-defined points, by which the gold will receive a firm mechanical attachment to the tin foundation. If this be not done, the gold covering is liable to be drawn from the tin, leaving it bare and non-cohesive.

It is well to remove the gold from the pieces left after filling, because fresh annealing is necessary, and also because confusion might arise from allowing such foil to get mixed with that in common use. It is a pleasure to lay foundations of this combination for large fillings where there is danger of the intrusion of moisture, or when it is difficult to anchor the pellets in place. By judicious use of gold and tin, gold may be greatly helped to preserve teeth.

"CHARLATANISM," says Oliver Wendell Holmes, "always hobbles on two crutches—the tattle of women and the certificates of clergymen."

Drying out Pulp Canal.—One of the most effective methods of drying out pulp canals are cones of Japanese bibulous paper, twisted up to look somewhat like the old fashioned paper lamp lighters. They can be made as fine as a cambric needle, and are stiff enough to reach the apex or any canal that they will enter. They absorb a great amount of moisture, in this respect being much superior to a cotton wound broach. Then thoroughly drying out canals before introducing any medicine is of the utmost importance, indeed, it is claimed by some, that a nerve canals that can be made perfectly dry is ready for filling, and that whatever pus or serum might behind the apex, if not poison by septic matter in the canal, will be absorbed.

Implantation.—Notwithstanding the many unfavourable criticisms applied to Dr. Younger's operation, we cannot but believe that under favourable circumstances, the operation will be attended with permanent success; especially do we think this would be the case, if freshly extracted teeth were used. Skin grafting is an assured success, the transplantation of a rabbit's eye into a human orbit has been accomplished, and if a fresh peridental membrane is brought into cantact with a blood supply, there is no reason why a vital union might not take place. Replanted healthy teeth will, as a rule, be reunited to the jaw and remain a permanent success. The bungling manner in which the operation has been performed, and the deceased condition of the parts, has been the cause of so many failures.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, April 4, 1887, Chas. S, Tomes, F.R.S., President, in the Chair.

The Minutes of the previous meeting having been read and confirmed,

Mr. Daniel Browning signed the Obligation Book, and was formally admitted to membership by the President.

The President announced that Mr. John Trude Fripp, of Willesden, had been duly nominated as a candidate for membership, and would be balloted for at a subsequent meeting.

The President announced that it was suggested by the Council that Mr. J. Bland Sutton and Dr. Dudley W. Buxton, both of whom had read valuable papers before the Society, should be elected Honorary Members, and that this proposition would be put to the vote at a subsequent meeting.

Mr. Frank H. Kissack, L.D.S., Eng., 17, Bentinck Street, Manchester Square, was then balloted for, and elected a Resident Member of the Society.

The Curator announced the following additions to the Museum :—The skulls of the Negro Tamarin (*Midas ursulas*), Common Paradoxure (*Paradoxurus typus*), Common Otter (*Lutra vulgaris*), Common Seal (*Phoca vitulina*), Collared Peccary (*Dicotyles tajacu*), Beaver (*Castor canadensis*), Crested Agouti (*Dasyprocta cristata*), and the lower jaw of a Sea Otter (*Enhydra lutris*), had been acquired by purchase; whilst they were indebted to the Zoological Society of London for the gift of the skull of a young Deer (*Cervus schomburgii*), in which the teeth and alveoli were extensively affected with disease. He hoped to be able to describe this specimen more fully on a future occasion.

Mr. W. Harrison, of Brighton, showed a model of an unusual case of double hare-lip. The patient, a boy five weeks old, was admitted into the Alexandra Hospital for Children, at Brighton, under the care of Dr. Whittle. The premaxillary bone was firmly attached to the septum of the nose, and occupied a very prominent position, the columella being at the tip of the nose. There was an unusually wide gap in the lip, but no opening in the palate, simply slight depression. Dr. Whittle removed the premaxillary bone, and drew the sides of the cleft together, including, or rather utilising, the columella. The result was that, whereas the nostrils had been previously extremely wide, they were now somewhat unduly pinched, and the lip had not the support of the maxillary process of the upper jaw. The child was discharged well, but was re-admitted about five weeks later, suffering from an acute attack of diarrhœa, which proved fatal within forty-eight hours.

Mr. W. Penfold showed and presented to the Museum a case of instruments, which were exact copies of some which had been found at Pompeii, and were preserved in the Museum at Naples, where they were labelled "Dental Instruments." Mr. Penfold remarked that they did not in the least resemble any instruments now in use in the profession, and he much doubted whether they were correctly described by the Museum authorities. He thought it much more probable that they had been used for modelling clay, or for enamel work.

Mr. S. J. Hutchinson remarked that when he visited the Naples Museum, in 1878, there were no dental instruments, even so-called, to be seen, though he had searched for them.

Dr. St. George Elliott showed a modification which he had made in the Hodge right angle attachment. Those who had used this instrument must be aware of its one defect, that of not holding the bits securely, particularly when the instrument is a little worn, owing to the screw slightly loosening. The modification he had made, consisted in attaching to the cover of the screw the lock-pin of the early S.S. White right angle. This completely overcame the defect, but introduced a fresh difficulty of minor importance—the bits must be properly made, or the lock-pin would not close.

He had hoped to have been able to show also a model of a hot-air engine, but the maker had disappointed him. These machines could be used for running the dental engine, but were not sufficiently powerful for general laboratory work.

Mr. Ackery showed a pair of forceps for the division of lower molar stumps, which had been designed by Mr. Rowney, of Derby. On the inside of the blades was a projecting shoulder, to prevent them from slipping further down than was desirable.

Mr. C. V. Cotterell showed models of the mouth of a youth, aged eighteen, whose teeth were dark yellow in colour, and so soft that they could be cut with a knife. He had enjoyed good health, with the exception of a severe attack of dysentery when about a year old; could this illness have had anything to do with the state of the teeth? It should be mentioned, however, that a paternal uncle had very similar teeth.

Mr. D. Hepburn remarked that he had seen one case in which the prolonged use of acids, prescribed medically, had caused compete decalcification of the teeth.

The President inquired whether anything was known of the treatment to which the patient had been subjected for the dysentery?

Mr. Cotterell replied in the negative.

DENTAL STUDENTS SOCIETY, NATIONAL DENTAL HOSPITAL.

ORDINARY meeting held on Friday, May 6th. Mr. Henri Weiss in the chair. After the confirmation of the minutes of the previous meeting, notice was given of the rules to regulate the issue of books from the library of the Society, and on matters connected with the museum.

Mr. Rymer then drew attention to a condition in the mouth of a boy, aged 18, where there appeared an absence of development of the front portion of the inferior maxilla including the tip of the tongue. Discussion was postponed with a view of obtaining a more reliable history as the boy was unable to state whether at any period he had suffered from necrosis, or had received an injury in the part.

After a number of models and tooth specimens had been handed round, Mr. Alfred Prager was called upon to read his paper on "Art in relation to dentistry" in which he urged his hearers to observe what great importance must be attached to the expression of the face by the arrangement of the dental arch, whether in regulation treatment or in the artificial substitution of the teeth. He cited as examples the various expressions obtained by the great masters by the disposition of the mouth and teeth, and pointed out that with the same features a change could easily be produced from one of the highest intelligence to that of idiocy, and from repose to rage. After the usual vote of thanks the meeting was adjourned until Friday, June 3rd.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the Odontological Society will take place at its rooms, 40, Leicester Square, W., on Monday, June 6th, at 8 p.m.

Business—Casual Communications, by C. W. F. Henri Weiss, on the destruction of a permanent tooth pulp by an alveolar abscess attached to a deciduous molar.

Paper by Prof. Victor Horsley, F.R.S., on "epileptiform neuralgia of the fifth nerve, treated by avulsion of the nerve."

WILLOUGHBY WEISS

Hon. Sec.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

AT the April period of examination, the following candidate passed the First Dental Examination :—John A. Biggs, Glasgow.

The following candidates passed the Final Examination and were admitted Licentiates in Dental Surgery :—Wm. Holt Woodburn, Glasgow ; Thomas Holroyd Wood, Bolton.

APPOINTMENTS.

C. M. Cunningham, D.D.S., Univ. Mich. and L.D.S., Edin., and E. S· Morris, L.D.S., Eng. to be Dental Surgeons of the Brighton Dental Hospital.

John Wood, L.D.S. to be Consulting Dental Surgeon, Brighton Dental Hospital.

Mr. Gordon Hooper, L.D.S., Eng., has been appointed Dental Surgeon Bethlem Royal Hospital and King Edwards School. (Girls Division.)

Mr. P. E. Fox has been appointed Honorary Dental Surgeon to the North Shields and Tynemouth Dispensary.

VACANCY.

London Dental Hospital. Assistant Dental Surgeon, Application by June 1st.

TRANSFER OF PRACTICE.

We are informed that Mr. Lyddon, L.D.S., Eng., of Reading has joined Mr. Cox, L.D.S. Ed., of Jersey, and will shortly succeed him, and that Mr. S. Aveline has succeeded to the practice of Mr. Lyddon at Reading.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

To the Editor of the "British Journal of Dental Science."

SIR,

"Lecturing on Dentistry to Popular Audiences" is a subject which has quite recently engaged the attention of most of the principal dentists of this town, (Bradford) but which (owing to thediffiulties pointed out by a correspondent in your issue of1st May, viz., that their efforts should not be construed by the public as a means to advertise) was abandoned, and this notwithstanding the fact that it had been decided to accept the gratuitous services of an eminent dentist, an able lecturer and an entire stranger to the town.

I cannot readily express the feeling of disgust and annoyance I felt when I found that instead of having someone solved this difficulty the solution was but another ebullition, an exuber-ance from the pen of an advertising gentleman.

That the whole is an obvious deviation from the truth is proved by evidences too extensive to particularise; the few which I enclose (and in order to spare your valuable time I have marked) are perhaps, the most drastic examples of the author's unabashed "confidence" and may be sufficient.

"It is the last straw which breaks the camel's back" and this truly must be "baneful to the last degree" not only to the seventy members of the profession in this town and district, but to the profession as a whole, were they cognisant of the facts.

Has the dental literature of to-day to be dictated by this abnormity, and handed down to posterity through the medium of your excellent journal as the outcome of modern dental education and registration?

I am, Yours etc.

J. HERBERT BOTTOMLEY.

80, *Gt. Horton Rd., Bradford.*
May 9, 1887.

WE are willing to publish letters from all comers, providing they are properly written and deal with matters of dental interest, if our correspondents do not practice what they preach, it is a matter of regret to us, but we fear we cannot help it. ED. B.J.D.SC.

HOSPITAL REPORTS.

Statement of operations, &c., performed at the Dental Hospital of London, Leicester Square, W.C., during the month of April, 1887:—

Number of Patients attended		2391
Extractions	Children under 14	443
	Adults	992
	Under Nitrous Oxide	772
Gold Stoppings		256
Other Stoppings		638
Advice and Scaling		181
Irregularities		102
Miscellaneous and Dressings		423
Total		3807

House Surgeon. R. Wynne Rouw,

Monthly statement of operations performed at the Dental Hospital, from April 1 to April 30, 1887:—

Number of Patients attended		1754
Extractions	Children under 14	397
	Adults	612
	Under Nitrous Oxide	683
Gold Stoppings		133
Other Stoppings		655
Advice and Scaling		466
Irregularities of the Teeth		326
Miscellaneous		317
Total		3589

House Surgeon, C. A. Pattinson,

Birmingham Dental Hospital, Report for April:—

Number of Patients attended	1036
Gold Fillings	14
Other Fillings	49
Advice and Temporary Fillings	121
Irregularities	6
Miscellaneous	112
Anæsthetic Cases	30
Extractions	890
Total	1222

W. Palethorpe,
House Surgeon.

Communications have been received from—

Secretary Odontological Society—Dr. Cacciaguerra, Catania; Mr. W. Dunn, Florence; Mr. Holmes, Bradford; "Secundus," Bootle; Secretary Pharmaceutical Society—Mr. H. Moxon, London; Mr. Smale, London; Mr. Willoughby Weiss, London; Mr. Wynne Rouw, London; Mr. Pattinson, London; Mr. Palethorpe, Birmingham; Mr. Howarth, Bradford; Mr. Bullin, Chester; Dr. Magitot, Paris; Mr. Hinds, Coventry; Mr. Robertson, Edinburgh; Mr. Harrison, Brighton.; Mr. Christopher Heath, London.

BOOKS AND JOURNALS RECEIVED :—

Principles and Practice of School Hygiene, Western Dental Journal, British Medical Journal, Chemist and Druggist, Raven Odontologique, Putsey District Advertiser, Dental Cosmos, Transactions Pharmacutical Society, Transactions Odontological Society, Dental Review, Ohio State Journal of Dental Science, Items of Interest, Southern Dental Journal, Le Progres Dentaire, Dental Advertiser, Dental Review, Annual Report of the Holloway Sanatorium, L'Odontologie, Monattsschrift des Vereins, Deutscher Zahnkunstler, Deutsche Monattschrift für Zahnheilkunde, Die Zahutechuische Reform.

TO CORRESPONDENTS.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., before the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer, which are not to be published when not desired.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, 289 & 291, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) . . 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

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AN ABSTRACT OF AN ADDRESS.

By Mr. Fred Bullin, J.P., L.D.S., Eng. *President of the Midlands Branch of the British Dental Association,*

(*Continued from page* 469.)

Passing now from Dental Mechanics to Operative Dentistry, as practised from thirty to forty years ago, I can endorse all that was so well said last year at Bradford, by our friend, Mr. Matthews. The means of obtaining a theoretical and practical knowledge of Operative Dentistry was very limited. To supplement the practical instructions of our teacher, we were thrown upon the works of Fox, Nasmyth, Bell, Chapin Harris, and others, for theoretical information. I need not tell you how the profession welcomed the published lectures of John Tomes, in 1848, which shed such a flood of light upon Dental Surgery, and has grown into the present invaluable manual, the joint labours of a worthy sire and equally worthy son.

Only the elder members of our profession can remember the close application necessary (in the absence of dental schools) to become a correct diagnostician, and a skilful operator. In some dental families, whose honoured names are familiar to us, their methods of practice were practically family secrets—a kind of family property unconsciously held by them; and to this may be attributed their success in practice. In saying this, I cast no reflection upon honoured names—far from it; for when dental schools were instituted, their rich stores of knowledge were freely poured out, for the advantage of the student, and for the cause of suffering humanity.

Up to 1840, the German Key was chiefly used for the extraction of teeth. Of course there were crude-shaped and clumsy kinds of forceps, resembling gas-fitters' pincers, for the removal of single-fanged teeth, which may now be exhibited as curiosities. The greatest honour is due to Sir John Tomes, for his invaluable invention of the modern tooth-shaped forceps. It is impossible to estimate the amount of human suffering that has been prevented by that priceless invention—the result of years of thought and application, and so generously given to the profession and to the world.

The methods then adopted for treating exposed pulps were very uncertain, and even cruel. The actual cautery was not unfrequently used; and even when zinc chloride and arsenic were used, for want of proper appliances, the removal of the pulp, from some teeth, was not even attempted. I have sometimes thought that the number of successes, under the use of arsenic, arose from our unconsciously adopting Coleman's method in anticipation.

Until about fifteen years since, the Burring engine had not been invented (since then so much improved !) with its numberless drills and appliances. But now how could we "open up" a molar for treatment without it? The same may be said of the rubber dam, the saliva ejector, the hand mallet, and the electric mallet. How could we build up hard-gold contour fillings, without these aids? The Wilkinson operating-chair of to-day, so invaluable to the specialist in tooth-filling, is as far ahead of those in use forty years ago, as the modern "locomotive" is of the old stage coach. There was, therefore, every excuse for the very frequent use of the forceps in those days. But nature, always beneficent, seemed to rebel against this course of procedure, and called in the aid of science to do battle on behalf of conservative dentistry. Consequently, in many a practice, where twenty teeth were extracted at that date, probably only two now fall victims to the forceps.

During the last quarter of a century, conservative and reparative dentistry have made such advances that, with the multiplication of dental dispensaries in all the large towns in the United Kingdom, the labours of the mechanical dentist will be very materially interfered with; for the demand for artificial teeth will assuredly decrease in the middle classes, as it has for some years past in the upper classes of society.

Again, with the modern appliances in our hands, we have, I think, become more humane as operators, and we may congratulate ourselves upon not being so much dreaded by the public as formerly. The Abernethy habit of brusqueness of manner with the terrified patient, both in dentistry and surgery, has, or ought to have, entirely passed away. An age of dental civilisation has set in. The rough, and consequently inhumane, operator of the past generation is no more, and, as a matter both of principle and of policy, students are taught to act (as gentlemen) as gently with the peasant as with the peer.

I have endeavonred very superficially to sketch from memory, a contrast of Dentistry, both mechanical and operative, over three decades, with the advanced methods of the present time. But I have said nothing of the professional and social status of our profession during that period.

I now intend briefly, but plainly, to refer to that subject; and in doing so I am aware that I shall incur the censure of some worthy members of our profession, whom I would not willingly annoy. But I feel that I should not allow this opportunity to pass without stating my pent-up conviction of many years, and I am comforted by the thought that I shall be expressing not only my own views upon the subject, but those of by far the larger portion of those who hold the L.D.S. diploma of England, Ireland, and Scotland, as well as of Harvard and Michigan.

In the year 1855-6, there was a wide-spread desire among the dentists of this country, to form an association, for the purpose of founding a National School for the education of dentists, and for obtaining, by Act of Parliament, powers to institute a Board of Examiners, authorised to grant diplomas of fitness and ability to practise dentistry. As the result of this outburst of a very legitimate feeling, over three hundred enrolled themselves, during the first year, as members or associates of what was prematurely called "The College of Dentists." We well remember how hopefully and laboriously many good men and true worked, with these objects in view, viz., their formal recognition as a distinct and legalised profession, and the future education of dentists. I am in possession of "The Transactions" of that body, and a list of the members who at the time joined; and when recently scanning, in that list, the names of many still living, and those of equally good men who have since passed away, I could not help feeling that that list would compare favourably with any Medical or Surgical Society in existence. You may imagine how deeplypained the pioneers of that movement were, when, at meeting after meeting, letters of resignation were received from men of position in London, to whom the profession looked for assistance and guidance. The reason was soon discovered; the remembrance of it returns as I read in the "Transactions" as follows:—

"A letter was read from Mr. ———, F.R.C.S., declining to take part in the affairs of the evening; and it must be here stated, that the offer of presiding had been made to that gentleman, which had also been declined. Towards the latter part of the meeting, a statement was made by a gentleman present, that certain practitioners had taken up the idea of professional reform; and to this end had memorialised the Council of the Royal College of Surgeons, praying for a special examination in dental surgery, as in midwifery. This announcement caused a degree of surprise, on account of the *privacy* of the act, and its consequent reflection upon the profession generally. The hitherto uncared-for members of this branch of Surgery awoke to the astonishing reality that a small number of their body had gratuitously and secretly become the foster-parents of the rest, and had actually taken steps in the direction of tutoring them, as to the *only* means of becoming recognised and qualified practitioners in dentistry."

Humbly and persistently did those few (nearly all possessing the Surgeon's degree) stand knocking at the door of Lincoln's Inn, engaged in the task of pleading for admission on any terms, on behalf of themselves and their country cousins, the majority of whom were not dressed in M R.C.S. uniform. But their prayer was refused; for what did the Council of the Surgeons' College know of dentistry? Like persistent mendicants, although left out in the cold, they knocked again and again, and earnestly prayed for admission; and even promised the Council to assist them with their dental knowledge at the examining board, if only they would take them and their poor relations in.

At last the prayer of the eighteen pilgrims was heard and granted, and the fate of the College of Dentists was sealed. The Non-dental College applied for and obtained a Dental Charter, granted on the 8th September, 1859, which gave them power, by the aid of dentists, to institute examinations in Dentistry, and with this our hopes of a Dental Act and Dental College, formed to meet the necessities of the age, were crushed.

From 1859 to 1863 the minority of us applied for permission to be examined, *sine curriculo*, by this novel tribunal.

We stood the test of the examination, and, after handing over our gold to the coffers of the College, received certificates of fitness to practice dentistry. I fear the future dental historian will consider us a set of idiots, for having paid a large fee, simply to be informed (for our own and our patients' satisfaction) of what we knew before, that we were competent to practice dentistry. The idea of our profession being recognised by a Royal Charter had been dangled before the eyes of the College of Dentists. In time many favoured the plan, and meetings of the Odontological Soicety and the College were held, all naturally supposing that the terms would be liberal; instead of which a Charter was obtained, conferring power to institute Dental Examinations, and to grant Certificates; but not one word in the direction of making the recipients of them legalised practitioners, or granting them a single advantage enjoyed by the members of the College of Surgeons.

I have no hesitation in placing on record, as an opinion based on twenty-six years' observation, that the union with the College of Surgeons (so far as it can be called a union) was one of the greatest mistakes ever perpetrated by a body of well-meaning men—men, who, because the majority of them happened to possess the M.R.C.S. degree, longed for the maternal leading-strings, and led their provincial brethren into a dilemma, from which you, the future generation of dentists, will have to extricate yourselves.

I think I hear some worthy M.R.C.S. ask for proof of this assertion. I reply—

Firstly—The alliance was formed without the consent of the majority of the dentists of the United Kingdom then in practice, as the wishes of the profession were not consulted.

Secondly—It was formed against the wishes of the great body of the medical profession; and, therefore, can you wonder that the friction, then commenced, has continued to increase? and that we have never been recognised as more than tooth-extractors, by the majority of the members of the medical profession.

Thirdly—Because the Dental Charter did not confer upon us any of the advantages which the members of the College enjoyed, nor did it give us a legal status as a profession; for although we stood the test of examination, and so many of our names were placed on the roll of the College of Surgeons from 1859, it was not until, and by, the Dentists' Act of 1878, that we were a legally constituted profession—a kind of dental raft, saved from the wreck of the proposed Medical Act Amendment Bill of that date, that was submerged for the time by disputes in the medical profession, and therefore did not become law until 1886.

In proof of this, I will quote the words of the worthy President of the Students' Society of the Dental Hospital of London, as used at their meeting on February 14th, 1887. Referring to the importance of every L.D.S. having his name placed upon the Dentists' Register, he said:—

"In the first place, there was no such profession as that of Dental Surgery, until registration was established. It was purely by registration by the State that dentistry became a profession registered by law."

And then bear in mind, that by that Act a host of druggists' assistants and charlatans claimed the same legal privileges as we, who had taken the L.D.S. degree after 1859, and had practised dentistry solely. The only consolation is that over two hundred of these illegitimate dental names have disappeared from the register, and the number will annually decrease..

Fourthly—Because the M.R.C.S. never was, and never will be, a dental degree, any more than the L.D.S. constitutes a general Surgeon's degree. In saying this I cast no reflection upon those of our brethren who, by dint of industry, and by residence in the metropolis and other large towns, have had opportunities, and have found it convenient to take the M.R.C.S. in addition to the L.D.S. degree. But we cannot admit that this combination makes the M.R.C.S. a kind of higher dental degree. Suppose, for instance, you take nineteen out of twenty possessors of the M.R.C.S. or F.R.C.S. degrees into the operating room of one who has kept pace with the advancement of dental science, and consequently is in possession of the numberless appliances unknown to the profession thirty years ago, and ask him the names and uses of those instruments. Would he recognise one out of fifty of them? No! And why? Because he is only a Surgeon.

Again, when an M.R.C.S. sends you a patient, say with a molar whose pulp is diseased, and its fangs embedded in an alveolar abscess, for the purpose of having it extracted; suppose you, with the patient's consent, reduce the abscess, remove the diseased pulp, treat the cavity, and fill the tooth, who is so much surprised, if not annoyed, as the M.R.C.S. who sent him? If you ask him what treatmemt he would have adopted to produce like results, can he tell you? No! And why? Because he is only a Surgeon.

Again, an M.R.C.S. extracts a tooth, and excessive hæmorrhage follows. He uses various styptics and plugs the socket, but without avail. The fainting condition of the patient threatens serious consequences, and in not unreasonable alarm he sends to you for dental aid. You hastily construct a denture, and fix it firmly in position. Soon the blood ceases to flow, and the Surgeon's anxiety ceases with it. But the M.RC.S. is an authorised practitioner of the healing art; then why did he, in his alarm, send for you? Why? Because he is only a Surgeon.

Again, let us suppose a carriage accident has occurred; a wheel has passed over the patient's maxillæ; the superior one is crushed, and the inferior divided into two or more parts. The M.R.C.S. sends for you, and having placed the shattered bones *in situ*, you design and hastily construct metallic or vulcanite dentures, which, when applied and fixed, hold the shattered parts in their normal position. Meanwhile ossification gradually goes on, and a cure is effected. Why did the M.R.C.S. in his helplessness send for you? Why? Because he is only a Surgeon.

This is only the fringe of the subject. I will not weary you with more cases. But how can the M.R.C.S. be a dental degree? The separation of the dental from the control of the medical profession would, I think, be very popular, and equally so to both. The Medical Council are no more competent to deal with the future of the dental profession than the Commander-in-Chief of the British Army would be to act as Admiral of the Fleet. If we may judge from reports, the Council would be pleased to be relieved of what has proved an arduous task. Twenty-two years after the Medical Council had obtained the Dental Charter, and the College of Surgeons, with the aid of Dentists, had framed and enforced the curriculum, they had a long debate as to what class of the animal kingdom a Dentist belonged, and what his habits, &c., were. The united wisdom of that collective body could get no further than that he was "a tooth-extractor," but of a superior species of tooth-extractor, if he had taken the M.R.C.S.

At several of their meetings there were very warm and lengthened discussions, on the advisability of attaching other degrees than Dental to the names of the registered. One would have thought that common sense would have led them to decide that the L.D.S. of the Colleges of England, Scotland, and Ireland, with those of Harvard and Michigan, which they had selected for registration, would have been the only ones admissible to the Dentists' Register. Some of the members, however, proposed the addition of medical degrees, while others were afraid of disgracing those degrees by so doing. One member thought that "the introduction into the Dentists' Register of the sixty-two different titles, which were recognised by the Medical Act, would at least be inconvenient." One member asked another if he was aware that "a surgeon" (without being a dentist) "could practice as a dentist without registration," and the reply was, "I was not aware of it." Another member said—"The Council had to determine what was really a higher qualification in dentistry, and that the question resolved itself into this: Is the membership of the College of Surgeons a higher qualification in dentistry? He should be somewhat influenced by the views which Surgeons took upon the matter!" Observe what view the Surgeons did take—not the Dental Surgeons, who alone were capable of forming an opinion. One beam of light gleamed across the mental fog of that august chamber, when a worthy M.D. rose and said, "There seems to be an idea in the minds of all present that dentistry consists in pulling out teeth, and one man has got on the register because he has pulled out thirteen thousand teeth; but I would remark that dentistry is not pulling teeth out, but keeping them in."

At another meeting we again find the Surgeons and Physicians, in council assembled, still in a fog over dental affairs. One member advocated both medical and dental degrees being placed upon the Dentists' Register, to distinguish one dentist from another. "I think," he said, "it is very desirable, if barbers and sham apothecaries have got on the Register, that good men should be allowed to put their higher qualifications on the list." To this another member replied, "I have a word to say about the dentists, and I earnestly hope that this will be the last time that the dentists' question will be brought before us. We have had more trouble in the last two or three years with the dentists, than we have had during the whole preceding twenty years during which I have been a member of the Council. Twice we have been summoned here to meet specially about it. Four times already we have altered the Register, and this will be the fifth change we have made. From first to last the Dentists' Act has been the source of infinite trouble, and I believe it is likely to do very little good for either the dentists or the public."

Again, a member of the Council, tired of the quixotic conflicts over matters they did not understand, in very weariness of spirit, said—"I assure you I see with the greatest pain that gentleman opposite" (Mr. T——) "hanging day after day on the skirts of the Council. He ought to be sitting here, or at the head of a Board of Dentists. The dentists have, from sheer want of proper guidance, made themselves a fragment, instead of an independent body. They come and pay their money here, which we spend for them, and they have not a single voice in anything that we do affecting them. I am ashamed of it, and I regret it deeply. They ought never to have submitted to such an Act," &c., &c.

The words I have just read are not mine, but those of an enlightened member of the Medical Council; and truer words were never uttered. Prior to September, 1859, "the dentists, from sheer want of proper guidance, made themselves a fragment, instead of an independent body."

This opinion is shared by the great body of both the medical and dental professions. The former has shown in the lecture-room of the hospital, at the clinical lectures, that the "Dentals" have been treated as interlopers. The stigma clings to the hard-working dental student, when after five years' anxious study he has passed victoriously from the portals of Lincoln's Inn, and he is treated through life as only a tooth-extractor. The following case will illustrate the treatment the L.D.S. often experiences from some medical men:—

I knew an L.D.S. who was conveyed by an M.D. in his carriage to the house of a lady patient. They waited awhile down stairs until she had risen from her bed, and enveloped herself in a morning wrapper. The M.D. had been treating her for weeks for facial neuralgia, until she was exhausted from loss of sleep, and had to keep to her bed. On examining her mouth, the L.D.S. pointed out at once the cause of all the needless suffering. They placed the patient in a chair, and the M.D. proceeded to administer chloroform, in a very careless manner. The L.D.S., who stood by with forceps in hand, observed a cessation of breathing, and drew the attention of the M.D. to the startling fact. The handkerchief was dashed to the floor, and the M.D. exclaimed, "She's gone!" He had "lost his head." The L.D.S. earnestly said, "Take that arm," taking the other himself, and in an instant she was upon the floor. The L.D.S. knelt over the apparently lifeless body, and vigorously produced artificial respiration, and the patient breathed again, with the sound well known to those who have been present on such anxious occasions. That patient's life was saved by the L.D.S., but the M.D. did not thank him for it, nor did he ever cease to speak disparagingly of the L.D.S. diploma.

(*To be concluded.*)

THE PHYSIO-PATHOLOGICAL CONNEXION BETWEEN THE TEETH AND THE ORGANISM.

By Dr. Cacciaguerra, M.D., of Catania.

The object of the following paper is to prove what connection exists between the dental and other organs of the human body. I have previously published three cases of disease in the teeth from reflex action of the chief normal functions of the uterus, which clearly showed that the buccal organ is subject to morbid influences from physiological causes. These three cases were published by the *British Journal of Dental Science*, Vol. 27, No. 388 and 395, and Vol. 28, No. 407, the first of which was also reproduced by an American Dental Journal though suppressing the name of the author.

In order to oppose the general belief that a simple special course suffices for the education of a dentist to-day I again, by means of the press begin a second series of records of cases of disease of the teeth from reflex pathological action, that will, I hope, suffice to show the necessity of the general study by the dental profession at large of medicine and surgery.

La Signora B. C., 28 years of age, after her second confinement began to suffer from ovarian disease, but from want of a more certain diagnosis the illness could not be defined, it was only on the manifestation of dropsy, produced by the ovarian cyst, that all doubt ceased.

The sack of the cyst grew gradually according to the amount of fluid. In vain every means was tried to absorb or discharge the fluid, and the state of the patient at last obliged them to resort to puncturing in order to empty the cyst.

In course of time this operation became necessary for the existence of the patient, and had to be repeated each time the cyst became full, gradually the time between one operation and another lessened until at last it had to be punctured almost every 50 days.

In the mean time five moveable tumours of considerable size showed themselves in the cyst, which made the operation of puncture somewhat difficult as it required great care to avoid wounding any of them.

Four years passed much in this way, when La Signora B. C. was attacked by violent toothache in the right lower molar, which for some time had been decayed. I was called in to relieve her, from what I heard, as to the general state of the patient, I learnt the preceding details and that now the time of another operation was near.

From my diagnosis of the pain in the tooth I found it to be neuralgia. The remedies were, the application of a sedative to the decayed tooth and a temporary stopping, as well as some powders of hydrochlorate of morphine internally, in this way the neuralgia was subdued and cured. Three days after the cure, the cyst was again punctured, and the patient being relieved from the weight of the water re-acquired her usual and temporary relief from pain

From this first attack of pain in the tooth, whenever la Signora B. C. was near the period for the puncture, she was troubled with dental neuralgia limited to the same tooth, and for seven years this continued without any complication of other local symptoms.

The decay remained stationary and without sensible increase. The dental cavity and the three pulp canals were already exposed because he soft parts had been destroyed by caries. The tooth was nourished only by the alveolar periosteum. The pain was the effect of a local intermittent irritation which displayed itself in a neuralgic form in which the symptomatic coincidence with the dropsy made me conclude that the irritation was caused by a reflex pathological symptom, arising from an irritative mechanical pressure of the utero-ovarian plexus, transmitted by the action of the great trunk of the sympathetic nerve, to the cervical ganglion, nnd from this to the diseased tooth.

This periodical affection of the tooth did not admit of a radical cure, such as extraction, or a permanent filling because from the diagnosis, and from what has been written, above the neuralgia was plainly shown to be a reflex-pathological symptom of the dropsy, therefore, were the extraction made there would be no cure for it, in separating the tooth from the jaw it would temporarily lesson the irritative conductibility ; afterwards, not finding the primitive point elected of irritation it might have produced serious complications. At the same time a permament stopping of gold, platinum, amalgam or any other in the decayed tooth platina besides hindering the application of local remedies which easily calmed the pain might have complicated the state of the tooth, by closing the pulp canals, which in the irritative paroxysm had a purulent discharge, so that in these cases it was wise to keep only to the rational cure of the symptoms.

The patient reaching the usual period again suffered from pain, I was called in to prescribe for her. After the second day of the cure of the pain, the puncture of the cyst was again made.

The third day after the operation I was again called as the lady was suffering acute pain in the tooth. This being so new a phase, I asked about the result of the puncture, as experience had shown me, that after the operation the patient entered into a general improved state, I learned that owing to the absence of the usual practitioner, another surgeon had been called, who, not knowing or having been deceived by the three loose tumours in the fluid of the sack of the cyst, operated.

After half the quantity of water had been brought away the remainder became mixed with blood, which took the form of hæmorrhage, the surgeon then removed the tube and left the cyst without entirely emptying it and bandaged the body.

For the cure of the pain in the tooth the usual local sedatives sufficed.

Two days after the cure of the pain in the tooth la Signora B. C. was seized with inflammatory fever with serious symptoms at the point of puncture, her death followed next day.

A post mortem examination was made which showed that in the last operation, one of the five tumours had been wounded, this was declared to have been the cause of death.

This last attack of pain in the tooth showed that the reflex pathological correspondence being once established, whatever cause may irritate the diseased organ, the point of election does not cease to be influenced. Therefore, as soon as the first period of inflammation in the sack of the cyst was developed, it reflected at once on the tooth. But when the system was invaded by fever the pain in the tooth ceased, because the irritative conductability was disturbed by the general infection.

GOLD PLUGGING.

By T. Gibbons O'Neill.

In drawing up the following article in reference to the treatment of filling materials and the manner of producing good gold cavity plugs, the object hoped to be effected is, to give those who have never had the benefit of a special technical training, nor the advantage of attendance at demonstrations, etc., some little advice which may be of service when they are about to commence operations with the view either of trying their skill, or of accomplishing some necessary work.

Dispensing with the consideration of the treatment of sensitive teeth, and premising that the operator should be aware of what ought to be done, and how to do it, when there are difficulties of this kind in the way that require preliminary attention, previous to merely shaping the cavity for reception of plugs.

To commence at the beginning, the two descriptions of gold non-adhesive and adhesive it is understood require very different modes of manipulation, and the cavities for their reception are to be adjusted with the view of each receiving its own peculiar kind, whether it be non-adhesive or adhesive. I may state, however, that the most desirable shape of a cavity (which will do for the reception of either class of plug, provided that its dimensions are not too large, and that it be sufficiently deep), is that of a plain cylindrical form, such as might be produced by a drill or cutter, penetrating to a certain depth, this plain cylindrical shape of a cavity is the *beau ideal* of what a cavity would be by choice, but it is not always in the power of the operator to choose precisely what he wants, for things must be taken pretty much as the inroads of decay have left the teeth, and the operator can only make as much alteration in the shape of the cavity as he durst.

As having arrived at our *beau ideal* of a cavity, the consideration for simplicity, and work of filling this with a non-adhesive gold foil present themselves. The gold being in the form of leaf with a foil manipulation, it will be folded into the required thickness, and cut into lengths the breadth of which will be the length of the tape insertions, or it may be rolled with the foil rollers into a cylindrical form and put into pieces as long as are required. I lay my gold, when cut for use, upon a soft velvet covered pad, so that the plugger may be dug into the piece wanted, and this at once into the cavity, this saves time, as it is best not to take more time in filling the cavity than is required to constitute the plug a thoroughly good one; where the rubber dam, etc., is used, of course, it becomes safer, but still, the time is not to be frittered away by wasting the precious moments or seconds (when the plug has been filled up and its soundness secure, the operator will be more at liberty in the finishing stages).

Everything being at hand, with a cylindrical cavity to work on, and the material ready in the right lengths, the first piece is taken and inserted right to the bottom of the cavity and pressed against the side of the cavity very firmly, leaving the end projecting out of the orifice, then the next piece is taken up and treated exactly in the same way upon the top of the one already inserted and the same pressure against the side made firmly and completely. When the cavity is completely filled up so that no more can be inserted, the ends of the pieces which have previously been left projecting are now folded in, and carried into the plug as far down as possible with a thin tape-shaped plugger, suitable for this purpose, and all the ends being thus folded in, the plug will now be found to be of a dense and solid nature, it can be now malleted slightly, if desired, after which an instrument of a fine bayonet shape, being thin and of sharp triangular make, must be pushed into the plug. Wherever this instrument can be inserted more gold must be inserted in to the recess which it leaves, until the operator has worked over the surface of the filling and added more gold wherever admissable; now it will have more than a drum-tightness about it and can be again malletted, filed down, fine finished, and burnished to complete its finish.

Of course every operator must know the use of the enamel cutters, which has to be practised before the insertion of the plug, as their proper use in no small measure contributes towards the neat appearance of the finished work.

I can now draw attention to the shape of the instrument used previously to the addition of more gold to consolidate the work, being of the shape I have described, it will have no difficulty in finding an entrance, and on its withdrawal the piece of foil, etc., to be added and pressed home will find an easier insertion than if this perforating instrument had been of a different shape; that is, of a more tape-like or flatter description. This instrument for perforating to condense the fillings of soft gold the operator will have to make for himself, and experience will suggest what is most handy. The principles of filling with non-adhesive gold being given it may be observed that the cavity need not be under-hung nor under-cut to ensure a good plug, and that the pieces are put side by side, like matches endways in a box, until no more can be added, and it will be seen that a cavity with only three walls and no crown can be effectually treated in the same manner. Having settled the principles in his mind, the tyro can try a non-adhesive filling in a plug matrix which I will hereafter describe.

To treat of adhesive plugs, whatever be the form of the gold used, the principles of insertion are different from the others, as the means of hold-fast are determined by the non-adhesive holding, their place by mere mechanical juxtaposition and by the adhesive gold obtaining anchorage and firmness by the influence of piece by piece, one being welded as it were on to the other.

In the treatment of a cavity where the plug would not obtain security by being placed as before stated, we would, most naturally, turn to this other method of welding or condensing one piece of gold on to another, when once having obtained an anchorage, the work might be built up bit by bit, until the whole became complete and secure. Let us take a cavity of such a nature as would require the insertion of an adhesive plug. First drill holes, or retaining points, must be made, or a screw post put in to give some secure anchorage for the work, where it could be dispensed with would only be where the deep angular, or otherwise suitable shape of a cavity would render any extraneous assistance unnecessary. Retaining points may be made with a retaining points drill and by oscillating the handle, the drilled hole can be enlarged at the base or deepest extremity. All moisture and saliva having to be kept away from this and every other kind of plug, it is absolutely necessary to take every means and precaution to repel this enemy, if the slightest moisture comes into contact with an adhesive filling it is spoiled at once. Commence operations by having every needful requirement and having prepared the cavity as required, apply the rubber dam or something as an equivalent, the gold adhesive pellets or cylinders having been previously disintegrated with a pair of small fine tweezers, and then taking a small piece of gold, pack into the retaining point, or other suitable harbour, and press it home where it has to be with a small pointed condenser; the condensing points of pluggers must be small and not deeply cut, or otherwise they would chop up the gold and would not allow the next piece laid on the top to adhere properly. In gold filling it will be found that entirely new instruments do not manipulate the gold anything like so well as after they have been frequently used, and I make it a rule before using new pluggers to stick them violently into hard wood a great number of times as this leaves them in a better condition for use, but should the serrations be extremely shallow, as is often the case, then this may be dispensed with. Having placed the first piece of gold and malleted it, the there next may be placed where required and condensed, it may be found necessary to hold the first pieces in their places by using a point to steady them with the left hand, and I usually put the mallet in my waistcoat pocket, where it is to be found when wanted. The points of the condensing instruments must be small, as adhesive gold is not to be thrust on and malletted to where it is required, because this cannot be done, in the attempt the gold would simply be condensed where it was put in a lump and roll, consequently no progress would be made in the building up of the plug, every small piece must be put exactly in its place and every small piece must be condensed entirely before any more is added on to it.

Sometimes plugs are made or commenced with non-adhesive gold (which can be filled up more rapidly than adhesive), and an adhesive crown put on by perforating, applying adhesive gold and afterwards condensing and malleting but in such cases of course the different principles that the work is done on, must be carried out precisely on individual foundations as regards distinct manner of manipulation, let it be borne in mind that there is less waste in using adhesive material. Having the different methods well in mind, a few experiments may be made with the different kinds of gold, so that the operator may know what maker he likes best, and which can be most depended on for workable qualities, adhesive propetries, etc.

Some renowned gold fillers make experimental plugs with every known makers material, and try every method of manipulation to perfect themselves in the art of plugging and doing it expediously. A considerable amount of trouble must be expected.

A plug matrix will be necessary to every operator to help him in his work, so I describe its construction as plainly as I can : Take two small bars of steel, say two inches long, $\frac{3}{8}$ of an inch in thickness, and $\frac{1}{2}$ an inch in depth, now lay the two bars together, side by side, and have two holes 3-16th of an inch, drilled straight through both of them about $\frac{1}{4}$ of inch or rather more, from each end into these holes are to be placed steel pins for guides, which being fast on one bar, the other will slide to it or be detached at will. Having these two bars arranged in this way so that they may be put together or taken apart they are to be chucked on a turning lathe, so that a hole drilled where the lines meet when the bars are together, will produce the two halves of the mould when the bars are taken apart.

Having this plug matrix or mould at his hand, the operator can screw it, with the two halves shut or together, firmly into an ordinary vice, and manipulate any kind of a plug required experimentally; when finished, separate the matrix and have the cylinder plug in hand so that its condition may be examined minutely in every way.

The size of the plug of course will depend upon the size of the hole drilled into the line of separation of the two steel bars. The drill used to make this cylindrical hole would vary from less than $\frac{1}{4}$ of an inch up to $\frac{3}{8}$ of an inch in diameter, while the depth drilled would be $\frac{1}{4}$ of an inch to $\frac{3}{8}$ of an inch in depth as it might be a large plug or a small plug was wanted (a small plug matrix would be $\frac{1}{4}$ of an inch in diameter, by $\frac{1}{4}$ inch depth).

The superiority of this plug matrix over a decayed tooth which an operator might try to use for experimental filling is obvious, as it can be separated after the plug is completed without injuring the work, so that its exact condition may be tested.

At some future time I may go still further into the subject of "plugging" with a few remarks which I trust may be to the point.

RECENT RESEARCHES ON SYMPTOMATIC ALVEOLAR ARTHRITIS.

By Dr. E. Magitot, M.D., Paris.

Corresponding Member for the Odontological Society of Great Britain.*

Part I.—History—Definition—Nosology.

To-day we desire to again call attention to some particulars concerning the history of *Symptomatic Alveolar Arthritis*, a disease which has for a long time past been described by authors under various titles. We find it in fact described by Fauchard,* in 1746, who considered it of scorbutic origin; later on it was better described by Jourdain, in 1771, † who gave to it the title of "*Conjoint Suppuration of the alveoli and gums*"; this title was generally accepted by authors until Toirac substituted for it that of *Inter-alveoli-dental pyorrhœa.* This disease was again the subject of a communication made to the Academy of Sciences by Marchal (de Calvi) in 1861,‡ under the name of "*Expulsive gingivitis.*" Some years later on, in 1867, § we ourselves published an original paper on this affection, for which we proposed the name of *Alveolo-dental-osteoperiostitis*," a title which has since been generally adopted by authors, and which we have retained in our other communications on the same subject,|| We were led to this choice by the study of the nature and of the anatomical situation which seems to us to characterise this affection.

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* Translated by C. J. Boyd Wallis, L.D.S. Eng., Hon. Sec. for Foreign Correspondence, and read before the Odontological Society of Great Britain.

These lesions consist, in fact, of a derangement of an inflammatory nature, affecting at the same time the tissue which has been called the *Alveolo-dental periosteum*, and the bony covering which is subjacent to it, viz., the cement. The term osteoperiostitis was thus justified by the simultaneous lesion of a periosteal and osseous layer. The expression conformed, moreover, to the rule adopted in France on the subject of medical nosology, which gives to every disease a name corresponding to the anatomical lesions which characterise it.

Be that as it may, this last description does not appear to have satisfied all authors, for several of them have gone back to the term *expulsive gingivitis*, which is evidently incorrect, since the gum is never primarily attacked. Others again have taken up the term *alveolar pyorrhœa,* which term seems to prevail amongst English practitioners, and particularly with our colleague, Mr. F. Newland Pedley; whilst others, Dr. David,* of Paris, for example, propose to call it Fauchard's disease (*Maladie de Fauchard*), after the name of

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* "Le Chirurgien Dentiste." Paris, 1746. Tome I, p. 275.

† "Maladies de la Bouche." Paris, 1778. Tome II, p. 396.

‡ "Comptes Rendus de l'Acad. des Sciences," September 10th, 1861.

§ "Arch. Gen. Medecine." Paris, 1867, Tome I, p. 678.

|| "Dict. Encyclopedique des Sciences Medic.," art. *Dent.* Series I, Tome XXVII, p. 286.

* "Gaz. des Hospitaux." Paris 1886; p. 667.

the author who was one of the first to mention it as described. Following the same idea it is called in England as in America, Riggs' disease.

If this tendency to multiply without any definite rule the names of the same disease be persevered in much longer, one calling it from one of its symptoms, *pyorrhœa* or *suppuration*, it others giving to it the name of an author who has described with more or less exactitude, extreme confusion will be the result.

Moreover, amongst this diversity of titles the rule, referred to above, of invariably taking as the basis of nomenclature the pathological anatomy of the disease, is completely forgotten.

Thus, while regretting to add in our turn a new name to a nomenclature already so long, we feel ourselves nevertheless obliged to substitute once more for the designation hitherto employed, a title which, faithfully conforming to the precise rules indicated, will establish the nature of the disease with all the exactitude desirable. This title is that of *Symptomatic Alveolar Arthritis.*

The justification of this choice is very simple. The recent researches made in France, particularly those by Mons. Malassez,* have clearly established the fact that that which we have described as *periosteum* around the roots of the teeth ought to be considered, not as a membrane, distinct and, capable of being dessected off, like the osseous periosteum, but rather as a true ligament.

This manner of looking at it, already indicated by Kolliker in Germany, and by Ranvier in France, in his courses of lectures at the College of France, is generally adopted in our country We ourselves are in complete harmony with it, thus accepting the necessity of modifying in our studies the interpretation which we had until now assigned to this part of the dental organ.

The teeth are then in reality articulated with the jaws by the intermediary of a *ligament*, and every lesion of such an articulation ought to be assigned to the category of *arthrites.* We shall, then, henceforth thus describe the affection with which we are dealing.

As to the term *symptomatic*, we are induced to avail ourselves of it for the reason that this form of disease ought to be carefully distinguished from the affection hitherto described under the name of *Alveolo-dental periostitis,* and to which henceforth the name *simple alveolar arthritis* will be most applicable. This latter, which is in fact sometimes spontaneous or traumatic, but more often the result of the last stages of caries, possesses a character and progress quite distinct from *Symptomatic Alveolar Arthritis.* While the last commences at the neck of the root, the former appears only at the apex. Moreover, the loosening and displacement of the teeth, the initial phenomena in the symptomatic form, are very rarely met with in the simple form. Finally, suppuration of the alveoli does not exist in the latter. Let us add that the word *symptomatic* well expresses the relation which this arthritis holds with regard to the general diseases or diatheses which are invariably the first cause of it. These different specific terms indicate clearly the differential signs of the two affections, which can thus preserve the generic denomination of arthritis, the term *symptomatic* sufficing in our opinion to distinguish that with which we are occupied in this work from that of *simple alveolar arthritis,* which name should remain attached to the ordinary form.

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* "Arch. de Physiologie." Paris, 1885; p. 144.

PART II.—ETIOLOGY.

As we have already indicated in our previous researches,* the causes of this disease should be looked for, not in the local conditions of the mouth or gums, but in certain conditions of the general health. The disease ordinarily attacks a single tooth; occasionally several teeth may become involved, but in the latter case the affected teeth are not necessarily contiguous, they may occupy different positions in the mouth at a distance from each other. Toirac and M. Oudet believe they have observed that the inferior incisors were more particularly the seat. We have not ourselves recognised this peculiarity, which appears to us to belong more especially to gingivitis, which may in certain cases be confounded with Symptomatic Alveolar Arthritis.

The teeth most frequently affected are in order of sequence: firstly, the molars, then the inferior incisors, the bicuspids, the superior incisors, and lastly the canines. We have never observed this disease affecting simultaneously the whole of the teeth. At one time it is situated on one or two inferior or superior incisors, at another the incisors are spared, and one or more molars are affected, ordinarily two or three on different sides of the mouth. Sometimes the disease only attacks a single root of these latter, or it may be only a single side of a root, a circumstance which preserves to the root a certain degree of solidity for a considerable time. The teeth affected with Symptomatic Alveolar Arthritis do not generally present any preceding or accompanying alteration. Caries, for instance has no connection with this disease, and if this complication is present it is simply an accidental occurrence. It is, indeed, worthy of remark that the local conditions which accompany the developement of Symptomatic Alveolar Arthritis appear to be just the opposite to those which accompany the production of caries ; the buccal saliva is in fact rather alkaline than acid, an accumulation of tartar more or less abundant is observed in the places where it is usually met with. One might be tempted on the first glance to attribute to this deposit a part more or less active in the etiology of this disease, but it is not so. The deposit of tartar is a secondary matter, and in all cases, its formation being generally uniform and continuous in the same region, it cannot be cited in the production of an isolated and local affection.

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* "Arch. Gen. de Medecine:" 1867. Tome I, p. 684.

(To be concluded.)

PHARMACUTICAL SOCIETY OF GREAT BRITAIN.—A conversazione of this Society was given at the South Kensington Museum, on the 18th ult. A large and highly appreciative audience assembled, the large rooms where the band of the Royal Artillery played, being rapidly filled soon after nine o'clock. We observed many familiar faces there, and congratulate the President and Council upon a really brilliant evening.

PUMICE FOR POLISHING.—A correspondent writes, stating that he finds a piece of pumice, shaped like a "Water of Ayr" or Scotch stone, answers better for polishing than sandpaper. He has found great advantage from this "wrinkle."

MAGISTERIAL APPOINTMENT.—The name of Mr. James A. Jones, Barrack House, Broad Street, Hanley, has been placed in the Commission of the Peace for the Borough of Hanley.

British Journal of Dental Science.

LONDON, JUNE 1, 1887.

FACILITIES FOR THE INTERNATIONAL CONGRESS.

The Ninth International Congress, which will be held next September at Washington, is becoming too much a thing of the present to permit us to pass it over. When one contemplates an oncoming event for a long time beforehand, one is very apt to lose the keen edge of interest which envelopes novelties, but the importance of the meeting of which we are now writing is so great, that English dentists cannot afford to allow their apathy and stay-at-home proclivities snuff out their enterprise.

In another part of our present issue we publish very full particulars concerning the transport arrangements between England and America, and we would remind our readers that they should lose no time in booking berths, as there will be much crowding and inconvenience, and possible disappointment at last, if every one puts off taking their places until a week or two before September. The unfortunate misunderstandings which at first threatened to mar the success of the Dental Section of the Congress have all been dispelled, and there is every expectation that the section in which we are most interested will score a grand success.

The opportunities which the present occasion offers to us are not few or unimportant. All wise men take holidays, and the trip to Washington will give a delightful capful of fresh air loaded with ozone, while on arrival, the Englishman will find himself in the midst of keen professional brethren, who will gladly demonstrate to him their methods, and point out the various improvements which have been introduced into the American practice of to-day. The value of such demonstrations is very great, and for earnest, intelligent practitioners, who are really anxious to perfect themselves in modern methods and appliances, must afford considerable attraction. Of course, we all know that in England we hear a great deal about "American Dentistry." Unscrupulous persons speak of themselves as experts in systems that profess to be wholly different and superior to anything in vogue among English dentists; these men are a disgrace to the profession they practice, and can only bring discredit alike upon what they are pleased to term "American Dentistry," and to those who lend themselves to the imposture. Cultivated and educated Americans who practice dentistry, as all the world knows, and as English dentists gratefully acknowledge, have in the past done, and are still doing much to elevate the profession, and by introducing novelties, have improved methods and supplied ingenious expedients to meet and check the ravages of disease. The leaders of the profession in America no more set up for possessing a system of dentistry *sui generis* any more than does the American surgeon plume himself upon heading the universe with a system of American surgery. There will—if Englishmen are able to get over to Washington in time, and we earnestly trust every effort among the representatives of our profession will be made in that direction—be many occasions for testing and discussing some of the more modern American modes of treating dental disease and deficiency, which are not at present regarded very favourably by the profession in this country.

In details of office working, in expedition and recording of cases, we opine the Americans will show us some things, which, if not new to London men, will at least prove most serviceable to those who have not had the opportunity of seeing a widely spread selection of dental literature.

Even with the method we have for many years adopted in the *British Journal of Dental Science* of giving *resumés*, of foreign practice, and when need existed, reproducing the valuable articles which are constantly appearing in America, there remains the fact that for every one man who *can* grasp a method after reading a description of it, there are a dozen who will become expert only when they have facilities afforded them of seeing the actual manipulation. The response to Dr. Taft's invitation will, we trust, be very general, as, independently of the picked men whose duty it undoubtedly is to represent England at the Dental Section, we are sure that very many who, for lack of a better phrase, we may term "the rank and pile" of the profession, will find it altogether a profitable and health-giving trip to Washington. A glance at the tariff of the steamers and hotels referred to on page , will show that the holiday need not prove at all an expensive affair, and we may add there is little doubt that members of the Congress will be amply recouped for whatever outlay which is entailed by the professional lessons learned and the sights witnessed.

LITERARY AMENITIES AMONG DENTISTS.

We are not unfrequently obliged to forego the publication of letters and other communications on account of the violence and passionate flow of words into which our correspondents are led, we may, perhaps, briefly explain some of the reasons why we cannot indulge our friends by publishing their vituperations. Among a charming series of essays, not the least charming, is one which treats of the "artistic way of receiving a slap in the face," and it is this trenchant and truthful little gem of literature which we would commend to those who, living in a glass house occasionally receive slaps upon their faces.

We once knew a man, who, whenever he trod upon other men's toes, looked so sternly at the victim that he straightway, in spite of the agony from his betrampled foot, would humbly apologise to the aggressor, who, in turn courteously extended his pardon. However, this individual was not a professional man. It would seem, then, wiser for all who do not possess that inmate sweetness of disposition which smiles at hard words, that they should ignore the furious raging of the people, or at least keep their fingers from the neighbourhood of pens, ink and paper. We profess to make the "*British Journal of Dental Science*" the exponent of Dental interests in the United Kingdom, and that Greater Britain which includes our Colonies; we provide all sorts and conditions of men with useful and profitable reading, and we strive to take that aspect of dental politics which advocates in the best sense of the words Independence and Liberality. In our correspondence columns we admit letters of all sorts and from anyone which fulfil the following requirements; that they are original and deal with matters of interest to the profession at large; that they are not personal or libellous; that their publication subserves some end more useful than mere gratification of personal vanity and lust for notoriety. We cannot understand how professional men can demean themselves as they do by writing letters which are unfit for perusal by any decent person, and furthur suppose that we should ever allow the nasty trash to see the light in our columns. Whoever feels hurt or aggrieved let him dispassionately sit down and produce proof that the statements about him are unduly hard, or are altogether untrue, but let him refrain from calling his tormentor names, as black-potting the pot does not white-wash the kettle.

On the other side let us point out that abuses and humbugs are best exposed by calm statement of fact, rancour and highfaluting are ever apt to suggest personal animus, and so often defeat the object in view. We have no personal indication in the above, but desire our readers generally to realise the position we have always and shall in the future adopt.

LECTURES AT THE ROYAL COLLEGE OF SURGEONS.—Mr. Christopher Heath, Hunterian Professor, will give three lectures in June, on "Certain Diseases of the Jaws." The dates of the lectures are as follows, at 4 p.m.:—June 8th, "Chronic Diseases of the Jaws;" June 10th, "Tumours of the Jaws;" June 13th, "Diseases of the Temporo maxillary Joint and Closure." All members of the dental profession, and students, will be admitted on presenting their cards.

A DISHONEST "DENTIST."—At the Mansion House on Monday, William George Tice was charged with stealing a set of false teeth, of the value of £10 10s., the property of a firm of London dentists to whom he had acted as mechanical assistant since November last. The prisoner, without authority, had taken the teeth to the lady who ordered them, received the money, and given a receipt. The prisoner pleaded guilty, and urged that he had a wife and family to support, and that his wife was dying. As his employer did not wish to press the charge harshly against him, sentence of two months' imprisonment was imposed. Although called "a dentist" by the lay press, Tice's name does not appear upon the Register, and so he has no more title to be styled a dentist than the instrument maker has to be designated a surgeon because he makes scalpels and artificial arms and legs.

THE CONSULTING ROOM.—Dr. Dubray has recently published some instructive and amusing advice to a beginner in the profession (*Conseils a un Debutant*). The rules about the door-plate, necessary in the provinces, but not considered correct in Paris, concern French practitioners only. Dr. Dubray distinguishes four kinds of consulting-room: the unpretentious, the surgical, the artistic, and the encyclopædic varieties. They are not peculiar in France. In the unpretentious consulting-room the furniture is plain, the book-cases small, and there are just sufficient tables and chairs to allow the patient to sit down and the medical man to write a prescription. The surgical consulting-room presents instruments and appliances scattered about in an apparently artless manner. "Except in the case of a great and celebrated surgeon of admitted renown, an exhibition of this kind is in bad taste," but the exception itself is, we think, barely admissible. Complete abstention from parade of instruments is the best rule. It is not advisible to leave hypodermic syringes about the table, with specula serving as paper-weights. These instruments should not, any more than the herbalist's tape-worms and fœtuses in spirits of wine, be made into advertising agents.

Even the gynæcological couch should be kept in a corner and not placed well in the light, displaying a good supply of steps and elevating mechanisms. Such practices savour too much of the crocodile which hung from the ceiling of the alchemist's laboratory. The term artistic consulting-room, as used by Dr. Dubray, is not quite so innocent is significance as it appears. The objects of art are mostly votive offerings of grateful patients, including not only goblets, clocks, and bronzes, but also photographs, with autographs and expressions of gratitude contributed by patients who are distinguished public characters. Were the writer an Englishman speaking of British practitioners, he would add two other examples of art, one of a highly questionable type, the second unquestionably honourable, and legitimate. We refer in the first case to framed and glazed diplomas, honorary certificates of proficiency in anatomy, and similar productions which can hardly be classed among either literary or artistic ornaments. The second essentially English type of what we may call personal art includes prize cups and other testimonies of the athletic prowess which distinguished the practitioner in the days of his youth. Dr. Dubray rightly condemns an obstrusive display of patients' presents. In the encyclopædic consulting-room, instead of scientific or artistic neatness the most admired confusion prevails. The tables are strewn with books, pamphlets, and journals, and sheets of manuscript scattered over the ground testify to the literary activity of the practitioner. Dr. Dubray recommends a happy medium. The above comments by the Editor of the *British Medical Journal* might, without much modification, be applied to the dentists waiting and operating rooms.

APPOINTMENTS AT THE BRIGHTON DENTAL HOSPITAL. —It was erroneously stated that Mr. E. S. Morris, L.D.S., Ed., had joined the staff of the above hospital; the appointment was really that of Mr. E. L. Norris, who holds the dental diploma of the Royal College of Surgeons of England.

Abstracts of British & Foreign Journals.

ITEMS OF INTEREST.

WOMEN IN DENTISTRY.

MRS. R. B. RAMSAY, D.D.S., PITTSBURG, PA.

In America women have the legal right to practice, and this privilege is mainly due to the efforts of a few men, and the dental colleges are open to them.

Admitting women legally to practice is a check on the pernicious custom of the widows of dentists continuing the business, using the name and rights of the deceased, hiring imcompetent men to transact the business.

In answer to the question, Have women a right in dental schools? the writer says: Although the colleges were founded by men, and with men's money; women's money has also been used, and men further have taken up pursuits formerly held exclusively by women.

It is stated that in America the presence of women in the dental colleges is beneficial to the young men; they show less disposition to rudeness, and bad habits.

The profession generally has accepted the woman gracefully, not as a necessary evil but as a power for good, knowing that the women who have joined their ranks are from a good social stratum, and must eventually elevate the calling socially and professionally. Dental societies have given them a welcome and assigned them duties in public meetings.

Women are peculiarly adapted for the care, patience and delicate touch required in dental manipulations. The general public accepts the services of women. This is proved by the success of those following the business. That the women have not more fully availed themselves of the privileges is the result of long years of training called "womanly"; but this is a misnomer, for the world is ceasing to value a condition that in adversity means poverty and dependence.

More women in America are each year becoming dental students. Two of the thirty-two women graduates came from Germany, at a great expense, with attending sacrifices of leaving home and living in a strange country. They spent the time required by our colleges, and are welcomed home with greetings of honour and respect.

RETROSPECTIVE.

J. F. FRANTZ, M.D., WILMINGTON, DEL.

The nineteenth century developed for dentistry a position of credit as a department of surgery. The blacksmith, barber, and watchmaker are remembered by many persons living, as the only available persons to whom the sufferer could apply with hope of relief; their methods were those of muscularity rather than dexterity.

The insertion of teeth was practiced for many years in various primitive ways. The reinsertion and the transplantation of teeth are mentioned as early as 1579, by Ambrose Parke, who relates: "The loss of a tooth by a lady of quality was made good by the transplantation of one from the mouth of her waiting maid." Such operations never met with general favour, because it was unsuccessful, and because it was feared disease might go with the transplanted tooth.

Wood was sometimes used as a substitute for natural teeth, being carved from a block and attached by ligatures, or bands of gold or silver. Ivory was a cheap and satisfactory substitute; and the teeth of various animals were used, but unsatisfactorily.

The progress made in dentistry in America is great. There was only one practicing dentist prior to the war for independence, now there are over 12,000, and increase yearly by hundreds a year, there are twenty dental colleges and dental departments of universities throughout the Union Twenty of the different states have passed dental laws: Alabama was the first, in 1841.

In Europe, France has the credit of having made the earliest and most direct efforts for the advancement of dentistry and its recognition as a distinct profession. In 1700, persons desiring to engage in it were obliged to undergo a special examination.

England, which can now boast of having one of the best systems of registration for the control of dental surgery, gave little attention to it till recently. Tooth jerking was practiced as a superadded means of livelihood by blacksmiths, barbers, watchmakers, and others, in every village and country town; the occupation having apparently no attraction for medical men. Being thus consigned to the uneducated and charlatan, they paraded their speciality with such vigour as to receive the designation of surgeon dentists; a title applied without discrimination to educated or uneducated. About 1840, the attention of the medical profession was attracted to the subject, and legislative consideration was agitated, resulting in the passage of the medical act of 1843. In 1858, the Royal College of Surgeons, established special lectures and a course of examinations for dental students. In 1878, was enacted the present elaborate act. Violations of the law being punishable with a fine of twenty pounds sterling. Examinations of candidates are held at stated intervals by a board of examiners appointed under the act, and none are admitted to its privileges unless amply qualified for the responsibilities of the profession. Fine and imprisonment is the penalty imposed on any one for procuring or attempting to procure registration privileges either verbally or in writing, or assisting any one in such effort, to obtain the benefits of the act unlawfully. Every person registering under this act in the militia.

IMPLANTATION.

By Dr. J. G. Harper, St. Louis.

A case of implantation by Dr. Younger is reported: The tooth implanted was the superior *right* second bicuspid and had been out of the mouth for about eight years; it was implanted in the place of the superior *left* first bicuspid, which had been lost for nine years. Tho tooth has never given any trouble, no inflammation followed the operation, the gum healing by first intention.

Previously the writer of the paper had implanted a tooth for a lady patient. The tooth inserted had been out of the mouth for twenty-four hours; it was a superior left second bicuspid and was placed in the former home of a superior left second bicuspid which had been extracted fifteen years previous. The case did well.

Dr. Harper reports a further case: The tooth implanted was the superior left second bicuspid and had been out of the mouth for a month; it was implanted in the place of the superior left first bicuspid, lost five years ago. This case did well, and gave no trouble after the operation. These teeth can not be moved by pressure, like normal teeth. The opinion of those who have given attention to implantation, is that the teeth and process become ankylosed and thus are held in place.

CORUNDUM WHEELS; TO MAKE, FACE, OR STRAIGHTEN.

DR. W. D. BAUGHN, MILFORD, MICH.

To face or straighten, place the wheel between two pieces of glass, and hold between plyer points that will press over the centre of the wheel that the pressure may be even; now hold in boiling water a few seconds and your wheel will press down as smooth as the glass itself. Do not press very long and hard, or your wheel will thin out and enlarge. Always wet your glass to prevent sticking. To make new wheels, cut a hole in a piece of leather or rolled lead the thickness and size you desire your wheel; take a piece of old corundum wheel, (or prepare new material) warm it over dry heat and roll it into a ball and put into the leather circle, and press between two pieces of glass as above. It will thin down and fill the circle, and will be as smooth as the glass on the sides. Run a hot excavator shank through the centre for the hole, and cut off the protrusions with a knife, or grind it off on the emery wheel. For different wheels take different shaped pieces of glass, for instance, two watch crystals. You can thin out the material and cut your wheels with mes or tubes. To make something stronger than corund andiud shellac, take dental rubber and dissolve it in naphtha, and stir in conundum or emery. Place glass and lead in plaster in flask; when the plaster hardens, separate and put in emery, and vulcanise. Watch the heat, as rubber burns easily between glass, the water not getting at it freely. The naphtha should be allowed to evaporate before using.

CAUSES OF FAILURE IN FILLING.

DR. A. J. WAID. MONMOUTH, ILL.

In filling ordinary proximal cavities in an upper incisor, use velvet gold cylinders without any annealing. Push the first piece to place and partially pack with foil carrier to the opposite side from where introduced at the cervical margin. Now place at its side another cylinder, and as large as may be without tearing it. Mallet the two down with as large a plugger as convenient. Place in two more the same way and before malleting allow the ends of the cylinders to protrude a little, near the last, use one cylinder at a time. Do not yet condense the outer ends of cylinders. When the cavity is so nearly filled that you have only enough room to put in a round right and left plugger, cut some No. 30 cohesive gold into narrow strips one-eighth inch wide and less, and 1 inch length. Commence with the narrowest strips annealed and fill the remainder of the cavity, using the right or left small plugger. Now lay a strip of annealed gold over the ends of projecting cylinders and mallet, fill out with cohesive gold as far as you wish,—the upper part first with a foot-shaped plugger, and so on down.

Avoid wedging teeth apart, it is unnecessary.

A NEW METHOD FOR CONTINUOUS GUM WORK.

By Dr. J. W. Moffitt, Philadelphia.

This new method for continuous gum work is as follows :—

1. Each tooth has a slotted root by which it is firmly fixed in its proper place by an attachment described hereafter. This obviates the risk of breaking, etching, and all other objections incident to the old method, *and avoids the necessity of soldering the teeth to the plate.*

2. The body and enamel, being true porcelain and compounded with great care specially for this work, constitute a perfect, solid, and homogeneous whole, free from porosity, and as strong as the tooth itself, and *can be relied on to give uniform results.*

3. In baking this work, investments of plaster, asbestos, etc., are dispensed with. Flint sand is so used in trays as to prevent warping of the plate or checking of the body.

Instructions embracing all information necessary to insure success in continuous gum work by this method are simple.

The plate (platinum) is fitted to the mouth in the usual way, after the bite has been taken and the case put in the articulator, a strip of platinum curved to the desired position, to be used for the adjustment and retention of the teeth, is soldered to the plate with pure gold at four points, viz.: between the cuspids, the first cuspids, and at the ends of the strip. This platinum strip is cut with two V shaped projections at each of these points, one to be turned in and the other out, so that when soldered to the plate the strip will not touch between the soldered points. The plate is then cleansed with nitric acid, it is then ready for the reception and adjustment of the teeth.

The teeth are made with slotted roots, so as to admit the platinum support, and are placed in position by grinding them so they will rest firmly on the plate inside and out of the support. This is bent to accommodate any deviation of the teeth from the general curve. After the teeth are arranged they may be tried in the mouth; when, if the articulation and arrangement are satisfactory, they are ready for the application of the body.

The body is then mixed with water to the consistency of thick paste, and applied to the plate and teeth with a small spatula, packing it by tapping during the process, and absorbing excess of water with a napkin. After the body is packed around the teeth, inside and out, it is ready for carving, which should produce as close an imitation of nature as possible. Now cover the palatal arch with body about the 16th of an inch in thickness, packed as described, and carved to imitate the rugæ, etc. After brushing all particles from the plate and teeth it is ready for baking. The tray is half filled with pure flint sand after it has been subjected to a bright red heat to free it from impurities. The piece, teeth up, is then placed on this bed of sand, and all parts except the teeth covered with the sand. A test piece of the body is placed on the sand covering the palatal arch. Now introduce the tray gradually into the muffle of the heated furnace, by placing it in front of the muffle and moving it forward about an inch at a time, with intervals of about 10 min., till in place for baking. Close the door for about 5 min.; now push it still further back, and raise the heat to the fusing point of the test piece. Then withdraw, place in a muffle, close, and allow to cool; after it is cold remove, and if free from imperfections it is ready for the gum enamel. Mix the enamel with water to the consistency of thin paste. Apply it with a spatula to about 1-32 inch in thickness, or as the depth of colour desired may indicate. After the enamel is applied, wash it down around the necks of the teeth with a camels-hair pencil, and with a dry brush cleanse the teeth and plate of any adhering particles of enamel. It is now ready for fusing. Place it on the sand in the tray, being careful to brush away the sand, so that it will not come in contact with any part of the enamelled surface, and then carefully introduce into the heated muffle as at the first baking. When the enamel has flowed smooth, withdraw and place in a previously heated muffle; close, and allow to cool.

REPAIRING.

After washing the piece and wetting a slide, mix two measures of asbestos with one of plaster, and pour this on the slide to the depth of $\frac{1}{4}$ inch. Place the case on this, and cover entirely to the thickness of another $\frac{1}{4}$ inch. Dry it, then heat it in the muffle to a red heat, when it is to be withdrawn and set aside to cool. After breaking the plaster and asbestos from it, and cleaning by brushing, new teeth, or body and enamel, as the case requires, are added. Then proceed with the baking according to the directions for a new case.

THE INDEPENDENT PRACTITIONER.

DRIVING WHEELS AND STROKES IN A DENTAL ENGINE.

By William Herbert Rollins.

The writer emphasizes the importance of being able to vary the stroke and change the speed of a dental engine to suit the build of a person using the machine, and the particular work to be done. His remarks refer to the Bonwill type of engine. The pedal stroke in this engine is too long for the comfort of most operators. A tall man usually likes a long stroke, just as in walking he takes a long stride. For a short man the stroke should be shorter. The machines which a man uses should always be constructed to accord with his own structure. Unless this is done the amount of fatigue is unnecessarily increased. The second point is, that in an engine with a high speed, you cannot adapt the speed to the work to be done as the engines are now made. For example, with the strokes as rapid as is consistent with comfort, the speed is about right for the small burs; but if we use a sandpaper disk of an ordinary size, say three quarters of an inch in diameter, it is almost impossible to run the machine slow enough to avoid unpleasant heating of the tooth and injurious expansion of the filling. To modify the engine so that it shall not have these objections is a very simple matter. His own engine is arranged to embody these changes in the following manner:—Turn off one side of the driving wheel till a flat surface is reached, and then fasten a smaller wheel, about eight inches in diameter on to this face. Cut off the end of the hand-piece and extend the spindle enough to have a pully with a double groove. Cut off the stud on the driving wheel, and in its place fasten to the wheel a bar of iron having a slot in which the stud can move. In this way the stroke can be varied from, say, four and a half inches to two inches, to suit the build of the operator. These changes are not expensive and are quickly done.

NEW YORK MEDICAL JOURNAL.

INFLAMMATION OF THE ANTRUM.

By BEVERLY ROBINSON, M.D.

ON July 3, 1885, Miss K. B., single, 25 years old complained of a purulent discharge from the left nostril which had already persisted during four to five weeks. The patient was pale, nervous, and suffered considerably from neuralgic pains in the left cheek, orbit, and over the eyebrow. The nasal mucous membrane on the left side was red and swollen, and the occlusion was so great as to render respiration through the corresponding passage impossible. A small quantity of thick, purulent liquid was almost constantly oozing from the left nostril, which could be removed when it appeared by wiping it away, but could not be blown out of the nostril because of the obstruction occasioned by the infiltration of the soft tissues covering the septum and lower and middle and turbinated bodies. The left naso-labial furrow was less marked than on the right side, and the left cheek was swollen. Moderate pressure over the left antrum gave pain. There was no apparent bulging of the antrum. The hard palate was normal, and there was no alveolar abscess. The teeth in the upper jaw on the left side were filled—the first biscuspid with a gold filling, the first and second molars with amalgam fillings. The second bicuspid and the wisdom tooth had been extracted. The teeth remaining in the upper jaw were healthy. The treatment from July 3rd to July 27th was a salve introduced through the left nasal passage two to three times a day, composed of camphor, cubebs, vaseline, and glycerine;

and internally by wine of coca and pepsin. After a week had elapsed, Bland's iron pills were substituted, and a powder was insufflated into the left nasal passage several times daily with the anterior nasal powder-blower.

The powder was thus compounded :—

R Pulv. acid. tannici............gr. vj ;
Pulv. camphoræ ....gr. xxx ;
Pulv. iodoformi..... ....gr. xxv ;
Pulv. cubebæ ....gr. xv ;
M. Pulv. acaciæ..................ad ℥ ss.

On July 27th the left cheek became more swollen at its lower portion, and the gum around the second upper molar tooth on the left side was inflamed and sensitive. The tooth itself was somewhat moveable, and slightly painful on moderate pressure. The tooth was removed and the antrum perforated and was then washed out with a disinfecting solution by means of a small metallic syringe with a long, fine nozzle, and a portion of the detergent liquid passed out through the left nostril, carrying before it a small quantity of purulent discharge. Subsequently a cotton tent was introduced through the opening into the antrum. A great deal of pain followed and was relieved by half a grain of morphine. Two days later, as the injection into the antrum and the removal and introduction of a tent appeared unusually painful, cocaine, in four-per-cent solution, was used hypodermatically in the gum and antrum to the amount of sixteen mimins. This injection only allayed the pain of the cleansing to a slight degree. Later on the opening into the antrum was enlarged by means of a small burr attached to the dental engine.

The injections were frequently repeated the patient being each time placed under the influence of nitrous oxide gas. The tent was inserted each time after the injection.

The injections occasioned severe neuralgic pains, radiating in different directions, and especially toward the left ear, and the teeth of the lower jaw on the affected side. The injected liquid did not pass into the pharynx as is usual in analogous cases, but flowed out through the left nostril, it was therefore thought that the main occlusion in the left nasal passage existed posterior to the nasal orifice of the antrum. Examination with a probe serves in part to confirm this belief. 3rd.—Nitrous oxide gas was administered and the opening into the antrum further enlarged with a dental burr. Injection of antiseptic fluid followed. Reinsertion of tent, soaked in tincture of opium. Patient suffered acutely but was relieved by half a grain of morphine internally. Later on one drachm of salt to a pint of warm water was used as an injection by means of the continuous douche-bag, raised to a considerable height. The injection was continued until the solution came freely through the left nostril and was perfectly clear. Patient acknowledged that the left nasal passage was comparatively pervious. Patient subsequently recovered.

Another case of suppuration of the antrum is recorded.

E. J., 31 years of age, married, day-worker, has had a purulent discharge from the right nostril, during six months. One week ago a slight similar discharge from the left. In warm weather the discharge from the right nostril becomes thin. At times the discharge is alternately mucous and purulent in character, lasting several days. Every morning, at present, about a tablespoonful of liquid comes away from the left nostril, or from both nostrils.

There is no pain or swelling over the cheeks, but considerable pain over the eyes. The purulent discharge flows from his nose, at times, when he inclines his head forward. Some months ago he suffered from vertigo, and even now he has dizzy or other unpleasant sensations in the head, which are difficult to define, whenever he moves his lower jaw suddenly. Upon rhinoscoptic examination, both middle turbinated bodies are found to be much swollen, and the right nasal passage contains abundant purulent liquid. This secretion flows into the naso-pharynx, and is there visible. Except for the presence of pus, the throat is in a healthy condition. On careful examination no necrosed bone can be detected in any part of the nasal passages. The wisdom tooth of the upper aw on the right side is carious. There is, however, no tenderness or swelling in the vicinity of this tooth. The diagnosis made was suppuration of the right antrum. The following treatment is advised : Cauterisation of the right middle turbinated body by means of chloro-acetic acid after a cocaine spray has been used ; thymol spray twice daily, so soon as the immediate effects of the cauterisation have subsided. In the event of the purulent discharge continuing, extraction of the carious wisdom tooth was advised to be followed by perforation and washing of the right antrum.

Subsequently this patient recovered, the molar was not extracted.

A case of mucous inflammation of the antrum was further recorded in which the disease never reached the stage of suppuration; there was no carious tooth (although the first molar tooth was dead), and it seems probable that the antral affection was a direct extension of the catarrhal inflammation from the nasal passages.

W. E. H., mining engineer and hotel-keeper, single, *æt.* 26, had suffered from nasal catarrh since he was ten. He has had an acute attack during the past week. In that high, dry air, he feels much better. Marked headache always

(*To be concluded.*)

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF VICTORIA.

THE Annual Meeting of the Odontological Society of Victoria, was held on March 3rd.

The Hon. Secretary's report showed an increase in the resident membership.

The following papers were read during the year:—By J. R. Gurner, L.D.S. (Adelaide), on "The Teeth as Aids in General Diagnosis." E. Thomson, L.D.S., on "Fractures." Mr. Iliffe, on "Articulation." Mr. Kernot, on "Gold Consolidators." Mr. Cumming read two papers, one on "Dentistry, Historical and Anecdotal;" the other on "Sensitive Dentine." A discussion on bases for artificial dentures occupied one evening.

The meetings have been better attended, and greater interest has been taken.

The Hon. Treasurer's report showed a balance in hand of £19 19s.

The following officers were re-elected:—Mr. Cumming, President; Mr. Townsend, Vice-President; Mr. Iliffe, Hon. Treasurer; Messrs. Down, Kernot, and MacGregor, Committee.

Votes of thanks were passed to the office-bearers.

Mr. E. C. Carter exhibited a model with supernumerary in bicuspid region, also the model of the mouth of a patient, aged 76, in which an upper canine was being erupted.

Mr. Heath related a case, with the treatment for alveolar abscess.

Mr. Cumming then read a paper on the "Dentitions of the Mole," with microscopical illustrations.

The meeting then adjourned.

On March 31st the annual dinner was held; sixteen sat down.

After the usual loyal toasts, Mr. Heath proposed "The Society," coupled with the Hon. Secretary's name.

Mr. Thomson replied.

Mr. Cumming, President, proposed "The Dental Profession." Messrs. Down, Iliffe, MacGregor, and Thomson contributed songs, and Mr. Kernot a recitation. A most enjoyable evening was spent.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Discussion upon Pyorrhœa Alveolaris and Alveolar Arthritis.

The President remarked that the term "arthritis," used by Dr. Magitot, would probably sound strange to most of those present, though it did not really mean anything very different from what they were accustomed to. It was based on the opinion, held by the editor of the paper and others, that what was generally known in England as "the alveolo-dental membrane" was, properly speaking, a ligament, and that inflammation of it should not, therefore, be referred to as *periostitis*, but as *arthritis*. This view of the nature of the alveolo-dental membrane was founded, in part, on Comparative Anatomy.

Dr. Hale White said he had been interested for some time past on the subject under discussion, having had his attention called to it by the premature loss of the teeth which occurred in cases of Tabes Dorsalis. He showed a tooth which had fallen from the mouth of a patient affected with this disease. It was a lower molar; there was a little tartar on it, but its loss had been unaccompanied by any signs of inflammation. This falling of the teeth was, according to some authors, a rare but genuine symptom of Tabes Dorsalis, and there were apparently two ways in which it could occur. The soft structures around the jaw might swell, and one by one the teeth might fall out, although themselves quite sound; this might be followed by some necrosis of the jaw with discharge of a sequestrum. Or the teeth might fall out without any apparent cause, and the patient might lose a number of sound teeth within a few days, without any pain or swelling of the gums. Richardieu had recorded an example of the first kind, whilst examples of the second had been recorded by Hoffman, Lewis, Vallin, Demange, Gowers, and Féré. In many of the cases it was an early symptom, but still it was a question on which the dentist might be able to give the general physician some information, whether the teeth fell out more commonly in persons suffering from Tabes Dorsalis than in persons not so affected. He (Dr. White) was inclined to think that the teeth might fall out in many diseases, and that such an occurrence should not be exalted to the position of a symptom peculiar to Tabes Dorsalis.

Dr. White next referred to the atrophy of the lower jaw, described by Féré, as sometimes accompanying Tabes Dorsalis, and inquired whether dentists had met with such a condition of jaw. Disease of the temporo-maxillary articulation had also been described and regarded as significant of this disease, but it seemed probable that this also was only a coincidence, and that it was really caused by rheumatoid arthritis.

He should, further, be glad to know whether any examples of inco-ordination of the muscles of mastication had ever been observed by any of the members, and was the use of the "jaw-jerk" of any advantage?"

In trying to trace cause and effect in these cases, it must be remembered that any wasting disease would affect the teeth also, whilst on the other hand any difficulty in mastication would lead to impaired nutrition.

Mr. J. Bland Sutton, in reply to an invitation from the President, said he had come to learn and not to speak. He could only endorse the views which Mr. Pedley had expressed in his paper. The disease was undoubtedly chiefly of constitutional origin, but it also required local treatment; and as the physician did not consider that the teeth were in his province, and the dentist thought the constitution was not in his, the treatment of this disease fell between two stools. He had examined a large number of cases of rheumatoid arthritis, and found that premature loss of the teeth was a very common feature. It was also met with mollities ossium and in other wasting diseases. As to Tabes Dorsalis, it was, he believed, only a name for a group of symptoms not connected with any definite pathology. It was, however, a curious fact that some of the carnivora got symptoms closely resembling those of the locomotor ataxy in the human subject, including the falling out of the teeth and absorption of the alveoli.

To arrive at a proper understanding of Riggs' Disease it was necessary not only to look in the patient's mouth, but also to note carefully the constitutional state, and especially any indications of the presence of rheumatoid arthritis, and to obtain particulars of the patient's family history. It was only by the careful collection of facts that it could be ascertained whether Riggs' Disease was really a disease, or whether the name was merely a convenient cloak for ignorance,

Mr. F. J. Bennet said Mr. Pedley appeared to consider the vascular supply to the periosteum was derived principally from the vessels of the pulp and of the alveolus. But it was a fact which could be clearly seen from specimens in the Museum that there was a very free supply from the submucous tissue of the gum. The capillary network where the gum joined the neck of the tooth was very peculiar, from the looped arrangement of its vessels, a description and illustration of which was given in Salter's "Dental Pathology," and in Tomes' "Dental Surgery" there was a figure of an injected specimen showing the vessels much enlarged in a monkey.

Tracing the course of the disease, it would be found that the first symptom was increased vascularity at the gingival margin and separation of the gum from the neck of the tooth; that there was a strong tendency for this part to become congested, and that this congestion was followed by effusion into the submucous tissue, causing gradual destruction of the fibrous attachment of the periosteum to the tooth.

The belief in the dependence of Riggs' Disease upon tartar appeared to be still very general, but a strong argument against this was, that cases were frequently met with in which persons had large accumulations of tartar which had been forming for years, but yet had not caused separation of the gum from the tooth. This, he thought, was quite sufficient to show that there was no necessary connection between the presence of tartar and Riggs' Disease.

He agreed with Mr. Pedley that the disease was predisposed to by causes which brought about a lowered state of the constitution, as anæmia, dysentery, frequent pregnancies, feeble circulation, etc.

Mr. S. J. Hutchinson said he wished to say a word in defence of the name by which the disease which was the subject of discussion had been generally known for some years past. He was quite aware that Dr. Riggs was not the first to recognise the disease, but that the symptoms were accurately described in the first edition of Tome's "Dental Surgery." But Dr. Riggs was the first to point out that the removal of the free edge of the alveolus had the effect of checking to a considerable extent the progress of the disease. He had, in fact, pointed out the only method of treatment which had hitherto proved successful, and he (Mr. Hutchinson) thought that the connection of Dr. Riggs' name with the disease was not an undeserved compliment. It must be admitted that the profession was still in darkness as to the origin of the disease, and further investigations into its etiology and pathology were greatly needed.

Dr. Walker said he should be pleased to present to the Society the sections (eighteen in number) which had been prepared for examination by the members of the International Medical Congress of 1881, by Dr. Gibbes, and to which Mr. Pedley had referred in the course of his paper. The members could then examine them at their leisure, and form their own opinions respecting them.

Mr. Moore said it had been stated that evening that Riggs' Disease never affected all the teeth. With reference to this point he would mention the case of a lady, aged 30, whom he had treated for this disease about fifteen years ago. All her teeth were loose, and covered with hard nodular tartar from the crown to the apex of the root. Various remedial measures were tried, but proved useless, and eventually all her teeth had to be extracted.

The President said that some years ago, when on a visit to the States, he saw Dr. Riggs carry out his treatment in a good many cases. He did not remove the edge of the alveolus, for this was already gone before the cases came under treatment, but he gouged out and scraped away all the softened bone surrounding the affected teeth. His treatment was somewhat severe, but its *immediate* effects were certainly very good. In all the cases, however, which he (Mr. Tomes) had been able to trace out afterwards, the disease had recurred and ran its usual course.

The question with reference to the connection of tartar with the disease, which had been refered to by several speakers during the discussion, received, he thought, some elucidation from a specimen in the Museum. On looking at this it would be seen that the ring of hard tartar surrounded the tooth at some distance from the edge of the alveolus, and that the surface of the tooth between these points was quite clean. It seemed evident from this that the tartar could not be the cause of the absorption of the bone.

With reference to what had been said about the premature loss of teeth by patients suffering from locomotor ataxy, he could only say that in two cases of this disease which had come under his notice the teeth were in a perfectly healthy state. In both cases the disease was at a comparatively early stage.

Mr. Hern said the majority of those who had taken part in the discussion appeared to agree in considering that Riggs' disease was of constitutional origin, and he thought hardly enough attention had been paid to its local causes. It appeared to him that a good deal might be said in opposition to the theory of its being a constitutional disease. In the first place many of those who suffered from Pyorrhœa Alveolaris were in what might be termed vulgar good health. Then it was not unusual to find a single tooth affected in the upper or lower jaw, and sometimes only a single root, as the palatine root of an upper molar, the other being healthy. The way in which the disease spread on either side of an affected centre was much more suggestive of a local than of a general origin. The effect of local remedies also served to strengthen this view, and the fact that the disease could be checked, if not cured, by antiseptics. He thought that the difficulty in affecting a permanent cure arose from the fact that sufficient attention was not paid to the disease in its early stages. The following case, he considered, told in favour of a local origin. A patient came to him complaining that a tooth in the upper jaw was very tender. The gum round the neck of the tooth was much congested, and on feeling with an instrument he found a ring of characteristic hard nodular tartar hidden by the swollen gum. In removing this he came upon a bristle of a tooth-brush, and this had evidently been the cause of the trouble. With a little attention the part soon returned to a healthy condition.

Dr. Field said he could not elucidate the pathology of the disease, but should be glad if he might be allowed to say a few words with regard to some practical points in connection with it. He would repeat what he had stated before the Society not long since, that cases of genuine Riggs' Disease were comparatively rare, and he doubted if one had ever been cured. He knew that Dr. Riggs and others asserted that they had cured cases, but he himself had never yet seen a patient permanently cured. The disease was invariably connected with a depressed state of the nervous system. In several of the cases he had seen the patient was suffering from Bright's Disease, and one was suffering from locomotor ataxy. Medical and dental treatment must go hand in hand. Locally he still used Dr. Riggs' instruments, carefully removing all tartar and then applying aromatic sulphuric acid. The gums should at the same time be stimulated by rubbing and by massage with the fingers. By these means good results could be obtained for the time, and the progress of the disease checked, but he almost despared of obtaining a permanent cure.

Dr. George Cunningham thought that if Dr. Field would make further inquiries he might be induced to modify his opinions. It was Dr. Mills, of Brooklyn, who was chiefly instrumental in getting Dr. Riggs' name attached to the disease. He himself suffered from it, and was cured by Dr. Riggs. Dr. Riggs was a very modest man, and no reflections could be thrown upon him for the use which had been made of his name.

It was certainly very desirable that more exact knowledge should be obtained with reference to the pathology of this disease, and he would suggest that if dental students would examine the mouths of all the cases brought to the *post-mortem* room they would be sure to come upon examples of Riggs' disease, and might obtain sections which would be far more reliable than any which could be got from animals.

Mr. Storer Bennett said he should like to call the attention of members to the fact that there were a number of very interesting specimens of premature absorption of the alveoli to be seen in the Museum, and he thought that if members would take the trouble to investigate them carefully, they might add a good deal to their knowledge of the subject.

Mr. Pedley, in reply, said he could not agree with Dr. Magitot in thinking that the disease was contagious. He had never heard of a dentist getting it from a patient, and as to its spreading to contiguous teeth, it spread, not by contagion, but by continuity of tissue. As to the germ theory, this had been frequently suggested, but never proved. No doubt there was an abundance of germs present, but it could not be proved that any of these were specific. In the discussion which took place on this subject at the International

Medical Congress of 1881, Dr. Arkovy announced that he had discovered and cultivated some organisms which he thought were peculiar to this disease, but these observations had never been confirmed, and Dr. Arkovy himself did not appear to have thrown any further light on the subject.

Dr. Magitot also denied that syphilis or mercurial treatment predisposed to Pyorrhœa Alveolaris. He (Mr. Pedley) could only say that this did not accord with his experience.

So far as his limited experience enabled him to judge, he thought Dr. Hale White was right in concluding that there was no direct connection between Riggs' Disease and Tabes Dorsalis. Certainly in the cases of this disease which he had examined at Guy's Hospital, the gums were quite healthy.

He was not surprised to hear from Mr. Sutton that patients who suffered from osteo-arthritis were liable to suffer also from Pyorrhœa Alveolaris; it only confirmed his experience that it was a frequent complication of all chronic diseases resulting from constitutional debility.

Mr. F. J. Bennett supported the "catarrhal theory." Some cases of congested gum margin might be explained in the way he had suggested, but his theory certainly would not account for the course and symptoms of Pyorrhœa Alveolaris.

Dr. Walker had kindly offered to present his series of specimens to the Society. He (Mr. Pedley) readily admitted that several of these were valuable and instructive, but he objected to the sections taken from the jaw of an old dog which was losing its teeth being regarded as typical of Riggs' Disease.

He could not quite understand the grounds on which Mr. Hutchinson advocated the retention of the name "Riggs' Disease." He gathered that Mr. Hutchinson wished to retain it because it commemorated a method of treatment which was based on a theory which was now known to be incorrect, and which had proved unsatisfactory in practice.

He congratulated Dr. Field on having changed his opinions since 1877, and come round to what he believed to be a truer view of the case.

Dr. Cunningham had alluded to what he said was "a genuine case of Riggs' Disease," but as there was no definition of Riggs' Disease to be obtained, it was impossible to say exactly what was meant by "a genuine case." Dr. Riggs attributed the disease to the effects of tartar, and his treatment was intended to effect its removal. There was no doubt that the treatment did do good for a time, but only by the removal of *debris*, and to deal thus roughly with diseasee bone, breaking and lacerating it with instruments, appeared to him on the face of it an unwise course to pursue.

Mr. Tomes had referred to a specimen in the Museum which showed clearly that tartar was not to be found where the destruction of bone was going on most actively. He (Mr. Pedley) had alluded to this in his paper, and he had no doubt had the same specimen in mind.

Mr. Hern appeared to think that a ring of hard, dark tartar was the distinguishing characteristic of Riggs' Disease. What, then, would he call the cases in which there was no tartar to be found, but which were identical in every other respect?

The President then proposed a vote of thanks to the contributors of Casual Communications, and the authors of the papers read during the evening.

The Society then adjourned.

Dental News.

THE INTERNATIONAL MEDICAL CONGRESS.

THE ninth International Medical Congress will be held at Washington, September 5th, 1887. An important section is devoted to Dentistry.

The following is a detailed statement of the means of transport and Hotel rates in Washington, for the information of persons desirous of attending the meeting. All particulars respecting Hotel accommodation in any town in the States and Canada can be had, free of charge, by applying to J. P. Segg & Co., publishers of this journal, who are in a position to give reliable information on the subject.

By the Cunard, from Liverpool every Saturday (*via* Queenstown). First Class, 12 to 26 guineas; return, 25 to 45 guineas; intermediate, 7 and 8 guineas. Time, 6½ days.

By the Guion, from Liverpool on Saturdays, calling at Queenstown the following day. Saloon, £10 to £25; return, £20 to £35; intermediate at low rates.

By the White Star, from Liverpool every Wednesday, from Queenstown next day, £2 to £22; return, £24 to £35; Second Cabin, £7 to £8.1

By the National Steam Ship Company, from Liverpool; Saloon, from 8 to 15 guineas; return, 15 to 25 guineas.

By the Inman, from Liverpool on Tuesday. Saloon, £12 to £22; return, from £24 to £35; intermediate, £7 to £8.

State Line, from Glasgow every Friday, and from Larne and Belfast every Saturday. Saloon, 12 to 15 guineas; Second Class, 7 guineas.

By the National Line, from London every Wednesday (calling at Plymouth) and every alternate Thursday. Saloon, 10 to 15 guineas; return, 22 to 24 guineas.

By the Anchor Steam Ship Line, every Friday. First Class, 12 to 16 guineas.

By the Monarch Line. Saloon, 12 to 15 guineas; return, 22 guineas.

By the Norddeutcher (North German, Lloyd), from Southampton every Sunday and Thursday. First Class, £14 and upwards; Second Class, £11 10s., from Bremen.

Red Star Line, from Antwerp.

Hamburg Line, from Hamburg.

Royal Netherlands, to Amsterdam.

HOTEL CHARGES IN WASHINGTON.

Willards Hotel, Pa. Avenue, corner of 14th Street. Proprietor, Mr. Staples, is a first class Hotel, one of the best in the City. Charges from 3 to 4 dols. per day, inclusive of board and lodging; accommodation for over 600 guests.

The Riggs House opposite the United States, Treasury Buildings, near the President's mansions, the State, war and navy departments. Proprieter, Mr. C. W. Spofford. Charges 4 to 5 dols. per day.

St. Marc Pa. Avenue and 7th Street is on the European system. Proprietors, Messrs. Fitzgerald and Brumagim.

Arlington Hotel, 15th Street. Proprietors, Messrs, Bonelle & Sons. Charges from 4 to 7·50 dols. per day.

Ebbits House, corner of 14th Avenue. Rates from 4 to 8 dols. per day, accommodation for 600 guests.

Wormley's Hotel, corner of 15th and 11th Street. Proprietors, Wormley Brothers. Rates from 4 to 5 dols. per day.

Hamilton's, Hotel, corner of 14th Avenue and K. Street. Proprietor, Mr. Gibson. Rates 2 to 3·30 dols. per day.

Chamberlin's Hotel, corner of 15th Street. Proprietor, Mr. Chamberlin. Charges from 2 to 10 dols. per day.

Arm Hotel, 15th Street. Proprietor, Mr. Pratt. Family Hotel. Rates from 2 to 10 dols. per day.

Weleker's Hotel, 15th Street. Proprietor, Mr. Tettner. Rates from 1·50 to 6 dols. per day.

The above are first class Hotels: The following Hotels can be recommended for comfort and moderate charges.

Clarendon Hotel, corner of New York Avenue and 14th Street. Proprietress, Mrs. Colley. Charges from 1·50 to 3 dols. per day.

St. James' Hotel, corner of Pa. avenue. Proprietor, Mr. Schofield. Charges from 2 to 3 dols. per day.

Belvedere Hotel, close to the Capitol. Family and Tourist House. American and European plan. Proprietor, Mr. Robert Winkler.

Harris House, Pa. Avenue. European plan. Proprietor, J. H. Harris.

Congressional Hotel, New Jersey Avenue. Proprietor, H. Brook. Charges from 2 to 4 dols. per day.

Messherm House, corner of 15th Avenue and 1st Street. Charges from 2 dols. per day.

National Hotel, Pa. Avenue. Proprietors, Messrs. Tenny & Co. 2 dols. per day, accomodation for 300 guests.

Solars' Hotel, Pa. Avenue. Rooms only 1 dol. per day.

American House, Pa Avenue. 2 dols. per day.

TRAVELLING BOOKS AND GUIDES.

Appletons "Guide to the United States and Canada," in three volumes: One pocket book from 2.50 dols.

"New England Middle States and Canada." One vol. cloth, 1.25 dols.

"Southern and Western States." One vol. cloth, with maps and illustrations, 1·25 dols.

Appletons "Hand Book and Summer Resorts." 50 cents.

Appleton's New York "Hand Book and Summer Resorts." 30 cents.

In our next issue we shall publish a further list, including the rates of the principal New York Hotels as doubtless most visitors will desire to stop in that City.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next Meeting of the Odontological Society will take place at its rooms, 40, Leicester Square, W. on Monday June 6th, at 8 p.m. Business: Casual Communications by Mr. Henri Weiss, on the destruction of a permanent tooth pulp by an alveolar abscess attached to a deciduous molar. C. Storer Bennett, (1) a lower jaw containing the partly formed second bicuspid, developed with its cusps downwards and the roots upwards between the fangs of the second temporary molar. From a subject who is supposed to have lived in the "Stone age."

(2) An extraordinary example of perverted tooth development. Chs. J. B. Bridgman, case of irregularity. Paper by Professor Victor Horsley, F. R. S. &c., on Epileptic form Neuralgia of the fifth nerve, treated by avulsion of the nerve.

WILLOUGHBY WEISS, Hon : Sec.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by corrsepondents.

To the Editor of the "British Journal of Dental Science."

SIR,

Mr. Forshaw, whose letter has received some attention in your journal is, perhaps, hardly worthy of so much notice. He, however, is one of a numerous class of men who fail to practice what they preach. He condemns, and rightly, all advertising, but I fear the unhappy experience of the town of Bradford will show that Mr. Foreshaw is one of our most notorious advertisers. He asserts that among other titles he holds that of late Dental Surgeon to the Bradford Children's Hospital. I amongst others should be very glad to have Mr. Foreshaw's evidence for this statement, for I believe it to be a figment of his brain.

I am, your obedient servant,

A. B.

Communications have been received from—

Mr. Hughes, Oldham; Mr. Norris, Brighton; Mr. Christopher Heath, London; Mr. Forshaw, Bradford; Mr. Foley, Southampton; Mr. Birdsall, Leeds; Mr. George Thomson, Melbourne; Mr. T. Gibbons O'Neill, London; Mr. S. E. Foley, Southampton; Secundus, Bootle; Secretary Dental Students Society; Secretary National Dental Hospital; Enquirer; Secretary Odontological Society; Mr. Dunn, Florence; Dr. Magitot, Paris; Mr. S. G. Hugo; Dr. Carriaguerra, Catania.

BOOKS AND JOURNALS RECEIVED :—

Dental Cosmos, Independent Practitioner, Items of Interest, British Medical Journal, Journal of British Dental Association, Transactions of Dental Students Society of the London Dental Hospital, Dental Review, Medical Bulletin, Monattschrift für Zahnheilkunde, Monattschrift des Vereins, Deutscher Zahnkunstler, Ohio State Journal of Dental Science, Southern Dental Journal, Western Dental Journal, The Uses of Tobacco.

ANSWERS TO CORRESPONDENTS.

Mr. Forshaw, Bradford.—We admitted your former communication because it was of interest, we cannot deal with personalities, you are accused of advertising and admit it. We cannot publish supplements even if we wished to do so. We are not judges of poetry.

American Diploma.—The only registrable American diplomas are those of Harvard and Michigan. If you mean a bogus-diploma we dont know where to get one and would not tell you if we did.

Secundus.—There are no first rate manuals such as you require, you had better rely upon some good Dental Surgery.

TO CORRESPONDENTS.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., before the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer, which are no to be published when not desired.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communication be written on one side of the sheet only; and also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, 289 & 291, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) . . 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 466. LONDON JUNE 15, 1887. Vol. XXX.

LECTURES ON CERTAIN DISEASES OF THE JAWS.*

By Christopher Heath, F.R.C.S., Hunterian Professor of Surgery and Pathology.

Lecture I—.On Cystic Disease of the Jaws.

Mr. President and Gentlemen.—The occupant of the Hunterian Chair of Surgery and Pathology in this College has a large choice of subjects on which to address you, and my predecessors in office have accordingly ranged at will over the domain of surgery. I propose to confine myself to a comparatively small portion of surgery, but one of no little importance, and shall have the opportunity of referring for illustration to that splendid collection of pathological specimens which, begun by Hunter, has in this special department been greatly enriched by the labours of Liston and Fergusson, and is now without a rival in its perfection.

The "Injuries and Morbid Affections of the Maxillary Bones and Antrum" was proposed as the subject of the Jacksonian Prize in this College in the year 1827, but no dissertation was sent in for competition. The same thing again occurred in 1842, and this is the more remarkable, because the majority of Liston's great cases had occurred before this date, and both he and Fergusson were then actively engaged in instructing large numbers of pupils, some of whom might have reduced their teaching to paper.

In 1867, "The Injuries and Diseases of the Jaws, including those of the Antrum, with the treatment by Operation, or otherwise," was again put forth as the subject for the Jacksonian Prize Dissertation, and having seen much of Sir William Fergusson's practice, and having myself done some

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Delivered at the Royal College of Surgeons of England, June, 8th. 1887.

little work in the same direction, I ventured to compete, and had the satisfaction both of being successful and of adding to the museum a considerable number of valuable preparations, many of which I shall bring before you.

DISEASES OF THE ANTRUM.

The antrum maxillare, or sinus of the upper jaw was known as early as the days of Galen, but was first described with any degree of accuracy by our fellow-countryman, Nathaniel Highmore, of Sherborne, whose *Disquisitio Anatomica Corporis Humani* was published at the Hague in 1651. By the kindness of a former pupil, Mr. W. H. Williams, of Sherborne, whose wife is a direct descendant of Nathaniel Highmore, I am enabled to place before you the author's own copy of his anatomical work, bearing on the title-page the signatures of successive incumbents of the Sherborne practice. And yet it is remarkable that the copy of the same work in our College library is more perfect in containing a curious allegorical frontispiece, which is wanting in the Sherborne copy, although the *Frontis physiognomica descriptio* is there. At page 227 of this work will be found a plate illustrating (not quite correctly) the anatomy of the antrum, and from it Figs. 1 and 2 are reproduced. In another figure is shown a curiously inaccurate drawing of the antrum, which, as the author says, "is more frequently empty, but is sometimes found filled with mucus, into which the humours from the head are able to distil by a certain meatus from the cavity in the frontal bone and from the ethmoid bone." I need hardly say that there is no such communication with the frontal sinus as is here figured any more than there is any passage from

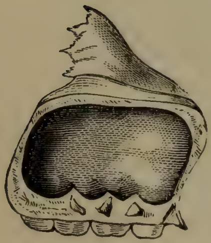


Fig 1.

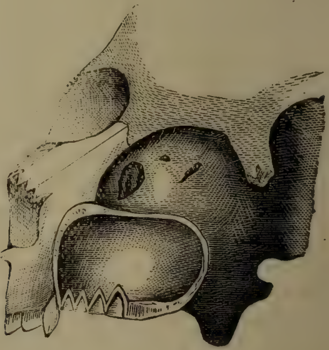


Fig 2.

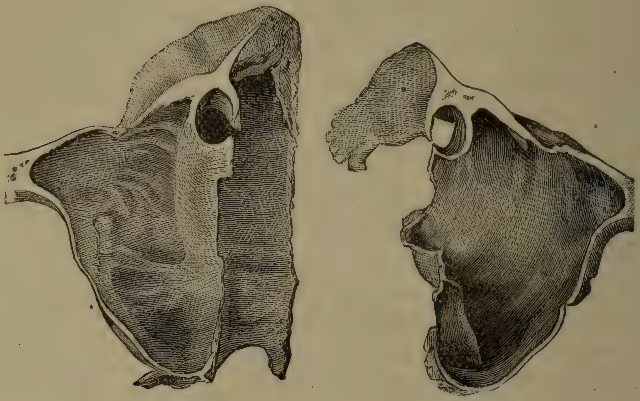
the pituitary fossa to the palate, which is given in the same drawing.

The only normal opening from the antrum is into the middle meatus of the nose, and this is shown on the section of the skull before you, on one side with the mucous membrane *in situ*, and on the other with it removed. The size of the aperture found in a macerated superior maxilla gives a very exaggerated idea of the opening in the articulated skull, where it is encroached upon by the palate, inferior turbinate, and ethmoid bones, which narrow and subdivide the opening into two parts. In the recent subject these are covered in by the mucous membrane of the nose, so that ordinarily there is only a small oblique aperture left in front of the unciform process of the ethmoid, and close behind the infundibulum. It should be observed that this opening is at the upper part of, and not near the floor of, the antrum, and that it opens into the middle meatus of the nose. Occasionally a second smaller aperture is found behind this, and nearer to the floor of the sinus, which has always been regarded as a natural formation. M. Giraldès, however, in his *Recherches sur les Kystes Muqueux du Sinus Maxillaire* (Paris, 1860), maintains that the posterior opening, when it exists, is always the result of pathological change, and that the anterior opening is into the infundibulum, and not into the meatus itself. I believe that slight variations in the position of the opening exist ; but it is undoubted that the aperture is very minute, and quite inaccessible from the nose.

Highmore describes the antrum as "a hollow, spherical or somewhat oblong in shape, and large enough to hold the terminal phalanx of the great toe." The fact is, that the size of the antrum is very variable, and this point was carefully investigated some years ago by the late Mr. W. A. N. Cattlin, F.R.C.S., who published a valuable paper in the *Odontological Society's Transactions*, Vol. ii, from which the following illustrations are taken.

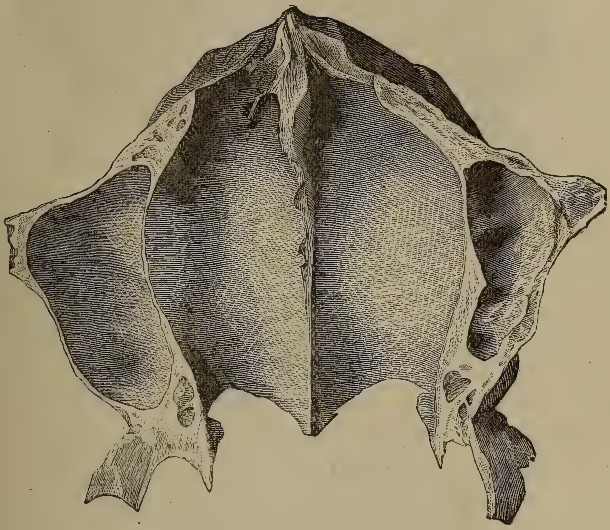
As the result of the examination of a hundred specimens, Mr. Cattlin found that, as a rule, the antrum is larger in the male than in the female, and that it diminishes in size with extreme age. In the young subject likewise the cavity is small, and its walls comparatively thick. Fig. 3 shows in a transverse section both the roof and floor of an adult antrum of the common shape and size, capable of containing two drachms and a half of fluid ; but a large adult antrum may be capable of containing eight drachms of fluid, whilst a small adult antrum containing only one drachm of fluid has been seen. The two antra are often unsymmetrical in size and shape ; thus Fig. 4 shows a much larger and deeper cavity on one side than on the other. The antrum may even extend irregularly into the malar bone, forming a supplementary cavity there; but the most remarkable variation is due to the development of the ridges of bone which subdivide the cavity ; these are very variable in size and shape. Fossæ of considerable depth are often found in the floor of the antrum, particularly at the anterior and posterior extremities, of which Fig. 5 is a good example, showing on one side a perforation by an alveolar abscess. A rare form is when fossæ or cells are developed beneath the orbital plate, or a *cul de sac* is formed close to the lachrymal groove.

Fig 3.



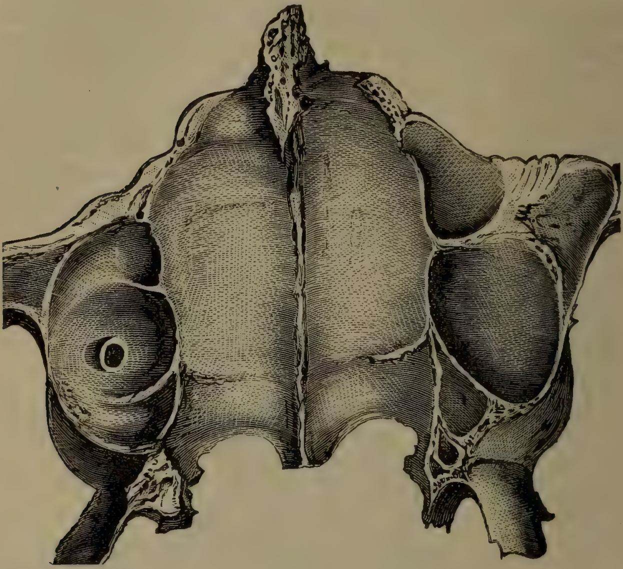
Suppuration in the antrum, or, as it is sometimes termed, *abscess*, is ordinarily the result of inflammation extending from the teeth to the lining membrane of the cavity; and the disease might, therefore, be not incorrectly termed an empyema, as proposed by Otto Weber. The roots of the first and second molar teeth often, and the bicuspids and canine occasionally, form prominences in the floor of the antrum; and when these teeth become carious, the thin plate of bone covering their fangs not unfrequently becomes affected, and disease is set up in the cavity. The fangs of the first molar tooth are occasionally found in health to be uncovered by bone, and to project beneath the living membrane of the antrum; and, under these circumstances, irritation and inflammation would be still more likely to occur. But an abscess may be formed in the alveolus, and eventually burst

Fig. 4.



into the antrum, though connected originally with teeth not usually in relation with the cavity.

Fig. 5.



The symptoms of suppuration in the antrum are at first simply those of inflammation of the lining membrane—dull, deep-seated pain shooting up the face and to the forehead, tenderness of the cheek, with some fever and constitutional disturbance; but occasionally the pain is most acute, and of a sharp, stabbing, neuralgic character. A slight rigour may usher in the formation of matter, which will find its way into the nostril when the patient is lying on his sound side, either through the normal aperture or through an opening caused by absorption, as maintained by M. Giraldès. An offensive odour is now sometimes perceptible to the patient, though not to those around him—thus differing markedly from what occurs in ozæna—and a sudden discharge of matter from the nostril when blowing the nose, may relieve all the symptoms for the moment. The more common course of events is, however, that without any acute pain the patient notices that he has a purulent discharge from the nose when blowing it, and perhaps is aware that, when lying down, the discharge finds its way into the throat. This latter point is often overlooked, however, though there may be a complaint of a very disagreeable taste in the mouth and a tendency to nausea in the morning, with a hawking up of pellets of inspissated pus.

With all this there is no distension of the antrum, and it is this fact which frequently misleads the practitioner. It is certain, however, that in health there is invariably an opening between the antrum and the nostril; and that, even when this is closed, the wall is very thin and readily absorbed; and it is quite exceptional, therefore, when the antrum is so distended with pus as to give rise to any prominence of the cheek. Undoubtedly cases of this kind have been recorded, but it may be doubted whether some of them were not examples of cyst, the contents of which had become purulent; for we know that cysts in the wall of the antrum readily produce great deformity. The natural opening into the nose is not at the level of the bottom of the cavity of the antrum; and hence there is always a small residuum of discharge, which the patient can only partially get rid of by holding the head on one side.

Given, a patient who complains of purulent discharge from the nostril, with occasionally a disagreeable smell, and the case is too apt to be put down as one of ozæna, and treated by nasal douches, snuffs, etc. But, as already mentioned, the offensive smell is perceived only by the patient, and not by his friends, the reverse being the case in ozæna; and, again, the discharge is only occasional, is determined by the position of the head, and is simply purulent, whereas in ozæna the discharge is constant, and mixed with offensive crusts from the nasal cavities. Again, the dull ache, varied occasionally by acute pain, is apt to be referred to the teeth alone, and the most careful examination may fail to detect any special tenderness in any one tooth. Hence, after exhausting the usual routine remedies for neuralgia, I have known wholesale extraction of useful teeth undertaken with no benefit, unless it should fortunately happen that the tooth which has perforated the antrum should be extracted early, when the discharge of pus at once clears up the nature of the case.

A still more serious result may ensue if the neuralgia, should, as it often does, take the form of frontal headache, and thus lead the surgeon to suppose that the discharge comes from the frontal sinus. I have twice been consulted in cases in which enterprising surgeons had proposed to trephine the frontal sinus, regardless of the serious injury to the patient's good looks, for chronic discharge which I proved to be solely due to suppuration in the antrum.

The more ordinary consequence, however, of an unrecognised empyema of the antrum is the damage done to the digestive organs by the constant swallowing of purulent fluid during sleep. Under these circumstances, the patient is always ailing, is unable to take food in the morning, and may be reduced to a state of great prostration even dangerous to life. The usual remedies for indigestion are likely to be of little service so long as the purulent drain continues.

In exceptional cases the pus, not finding an exit, distends the antrum, causing partial absorption of the walls, and thus both bulging out the cheek and thrusting up the floor of the orbit. Under these circumstances, the affection is readily recognised by the peculiar crackling which is perceived when the thinned bone is pressed upon, and the matter, if not evacuated, will shortly find a way out for itself, either by the side of the teeth, through the front wall of the antrum, or through the floor of the orbit; in either of which cases considerable necrosis and ultimate scar are likely to be the consequences. The possibility of both antra being affected either simultaneously or consecutively, must not be overlooked.

The elevation of the floor of the orbit already described may simply displace the eyeball and render it temporarily blind, as in a case recorded by Mr. J. Smith, of Leeds (*Lancet*, February 14th, 1857), or it may lead to permanent amaurosis—a point to which Mr. Salter called especial attention in the *Medico-Chirurgical Transactions* for 1862.

The treatment of suppuration of the antrum consists, in the first place, in the extraction of all decayed teeth or stumps in the affected jaw, and with this object in view those teeth which are apparently sound should be tested with a sharp knock with some metal instrument, when, if tender, they should be extracted. If the cause of the mischief be removed in time, the inflammation will subside under fomentation and the application of a leech to the gum; but if matter has formed, it must be evacuated without delay. If the extraction of a tooth is followed by the flow of pus, the enlargement of the aperture in the socket by the introduction of a trocar is at once the readiest and simplest mode of evacuating the matter; but if all the teeth are apparently sound, it will be advisable to perforate the alveolus above the gum with a trocar, gimlet, or strong pair of scissors, and similar treatment would be required in the rare case of suppuration occurring after loss of the teeth in old people. If it be determined to sacrifice a tooth, the first molar is to be preferred for extraction, both on account of the depth of its socket and also because, as mentioned by Salter, it is more liable to decay than the other teeth. In puncturing through the socket of a tooth with a trocar, it is well to gauge the depth to which the instrument may safely go with the fingers of the hand which grasps it, lest injury should be unwittingly inflicted on the orbital plate by the trocar entering unexpectedly, or if preferred, a trocar with a stop may be employed.

After considerable experience of both methods, I prefer the puncture above the alveolus, except when a tooth obviously requires extraction, because I find that the aperture is less liable to close up than when made through the alveolus and because food is less likely to find its way into the antrum. It is necessary, however, not to direct the trocar quite horizontally, but a little upwards, lest in a case of highly-arched palate the floor of the antrum should be injured, as I have known on one occasion, but then fortunately with no permanent damage, except the exfoliation of a minute portion of the palate.

Whatever method may be adopted for emptying the antrum, it is important that the cavity should be thoroughly cleansed by the forcible injection of warm water until it runs freely from the nostil. For this purpose an ordinary glass syringe is quite insufficient, but I have satisfactorily employed an ordinary Eustachian catheter for the purpose, to which an india-rubber injecting bottle is adapted. After a time, and with a little instruction, patients can learn to dispense with the syringe by forcing a mouthful of water through the antrum by the action of the buccinator muscles. After thoroughly cleansing, some detergent and slightly astringent lotion should be injected to restore the healthy condition of the mucous membrane, and for this purpose weak solutions of permanganate of potash or sulphate of zinc answer admirably; but these cases are exceedingly tedious, as a rule and take many months for their cure. If the perforation has been made through the socket of a tooth, care must be taken that particles of food do not gain admission to the antrum, and this may be accomplished by plugging the hole with cotton wool, or, as suggested by Salter, by fitting a metal plate to the mouth with a small tube to fill the aperture, which can be corked at pleasure, and will serve as a pipe for injection.

Ordinarily the pus is readily evacuated through the nostril, but I have seen large masses of offensive inspissated pus block up the opening into the nose and require very forcible and repeated syringing for their removal, and the same thing applies to clots of blood, which occasionally give trouble. A still more serious event is when a mass of inspissated pus gives rise to symptoms closely resembling those of a tumour of the upper jaw, and without producing that absorption which gives rise to the crackling characteristic of the presence of fluid. The following case of this kind occurred in my own practice, and the late Mr. Mason published a very similar one. A woman, aged 43, was admitted under my care, complaining of pain and swelling of the left side of the face There was an ill-defined swelling over the region of the left upper jaw, and the angle of the mouth on that side was drawn downwards. The swelling was both hard and tender; the skin over it appeared unaffected. In the mouth there was a tense, elastic, and tender swelling over the left half of the hard palate, displacing the alveolar process downwards. Slight discharge oozed from a small opening in the mucous membrane opposite the last upper molar tooth, the swelling being softer about this spot than elsewhere. The left nostril was blocked, its external wall being pushed inwards, and the patient complained of some discharge from it. The neighbouring lymphatic glands were not enlarged, and, with the exception of occasional pain in the tumour, the patient suffered no inconvenience, her general health being excellent.

She had noticed the swelling for about two years, and its commencement was attributed to exposure to cold. At times the swelling increased, and became more troublesome, especially after prolonged overwork. No history of syphilis could be obtained, and her family history was good.

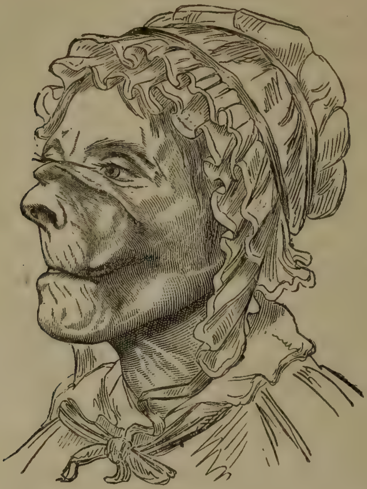
Believing that I had to deal with a solid tumour of the jaw, I made an incision through the upper lip in the median line, prolonging it into the nostril of the affected side. The alveolus and hard palate having been divided with saw and bone-forceps, a way was made into the latter, and a pultaceous offensive mass, about the size of a hen's egg, was turned out with the finger. On microscopical examination this was found to consist of fatty *débris*, granular pus-cells, and acicular crystals. As the larger portion of the left half of the hard palate was partially loosened and absorbed, it was removed with the forceps. The cavity of the wound was stuffed with a strip of lint, and the patient made an uninterruptedly good recovery.

The possible subdivision of the floor of the antrum by bony septa, already described, must be borne in mind in operating upon this cavity, and especially if there is reason to suspect the presence of any foreign body which may be keeping up irritation. In his paper already referred to, Mr. Cattlin narrates the case of the fang of a tooth lodging in one of these subdivisions, from which it was extracted with difficulty.

Hydrops Antri, "dropsy of the antrum," is an old name (which should, I think, be abandoned) for a disease which has long been recognised, though, within the last few years, opinions have changed as to the pathology of the affection. The history of these cases is one of gradual, painless dilatation of the upper jaw, until its outer wall becomes so thin as to crackle like parchment upon pressure being made, or at certain points being so absorbed that fluctuation is readily perceptible. Occasionally the other walls of the jaw yield, though more slowly, to the persistent pressure, the palate becoming flattened, and the nostril blocked by the bulging of the internal wall. On the extraction of a molar tooth and perforation through its socket, as described under the previous section, or more frequently by an incision through the osseo-membranous wall of the cyst, a quantity of clear or yellowish serous fluid is evacuated, which frequently contains flakes of cholesterine floating in it. After the evacuation of the fluid the swelling ordinarily subsides, the maxilla resuming its normal relations, and the opening closing.

The old explanation of these phenomena was that the aperture between the antrum and the nostril having become accidentally obstructed, the mucous secretion, which was presumed to be constantly taking place within the cavity, was thought to be imprisoned, and, by its gradual accumulation, to produce the symptoms which have been described. Following up this idea, we find surgeons, and among others Jourdain, of Paris (1765), who very accurately described the affection, recommending the restoration of the nasal orifice by probing—a useless operation, still described in many foreign manuals of operative surgery. Bordenave, in his *Observations on Diseases of the Maxillary Sinus* (Sydenham Society's translation, 1848), gives full details of this method of probing and injecting, but, after showing that there is great difficulty and uncertainty in finding the

Fig 6,



natural orifice, remarks that "there are very few cases in which the employment of injections through the natural openings, in the manner above described, would effect a complete cure." It is certain, however, that some of these cases, and very probably all of them, originate in the growth of a cyst or cysts within the antrum, or more commonly in the wall of the antrum, which either grow to such a size as to be mistaken for the cavity of the antrum when opened, or break into the antrum by absorption of the cyst-wall, so that on subsequent examination no evidence of cyst-formation can be discovered. This explanation is, as pointed out by Coleman, supported by the fact that in these cases of so-called hydrops antri the contained fluid in no respect resembles ordinary mucus, but is invariably a clear, more or less yellow, fluid, frequently containing cholesterine in considerable quantity. In these respects it closely resembles that found in well-marked cases of cystic growth, which have been examined in various stages of development.

A remarkable case of distension of the antrum is narrated by Sir William Fergusson, and I am able to show you the preparation, which is preserved in the King's College Museum. It was taken many years ago from a subject in the dissecting room, and from the person of an old woman. The tumour, which was of very large size, had burst shortly before death, leaving the remarkable deformity shown in Fig. 6, which is due to the complete absorption of the front wall of the antrum and its collapse, by which a prominent horizontal ridge of bone, formed by the upper wall of the antrum, has been left immediately below the orbit. The preparation shows great distension of the antrum, the diameter of which varies in different parts from two to two and a half inches, and the bony wall is so thinned out as to resemble parchment. The gums are edentulous. There is no communication between the nose or mouth and the cavity, which is lined with a membrane covered with laminated deposit. Whether this was originally a case of cystic growth or a chronic abscess, it is impossible now to decide, but it is, so far as I am aware, a unique *post-mortem* specimen of this distension.

(*To be continued.*)

OPERATION FOR THE REMOVAL OF A FORK FROM THE INTESTINES—RECOVERY.

By C. W. Dunn, L.D.S.

Fifteen years ago, a workman, Egisto Cipriani, while dining with friends at a restaurant in Florence, discussed with them the merits and performances of a conjurer who had been exhibiting his skill a few days before.

On the remark of the difficulty of such feats such as swallowing large objects, and among the rest, a fork—in an unfortunate moment for himself boasted that he could have done it. His friends urged him to put his power to the proof ; he found himself obliged to give a demonstration, and taking an ordinary fork, made of the metal called ‘packfong’ and putting the handle forward, he proceeded to introduce it into the gullet. He had no intention of swallowing it, but hoped to have slipped it up his sleeve or to have made it disappear by some dexterous slight of hand ; he thrust it down with so much vigour, however, that a convulsive movement occurred, and before he could prevent it, the fork was carried down and disappeared in much more complete a manner than he had intended. As may well be imagined, the festive character of the meal was completely changed by this event, and he and his friends quickly repaired to the neighbouring hospital, with a vague hope that something might be done. But medicine and Surgery were both baffled as to what could be effected in the treatment of such an unusual case.

It quickly became the topic of conversation in the City, professor after professor was consulted. Some doubted whether the man had really swallowed the fork, he was sounded, various ingenious machines were made to pass into the stomach, one being arranged so as to be able to seize the fork, and draw it upwards, this was found to be impossible. on account of the danger of lacerating the parts around. Some declared that they could distinctly feel the |fork, and some declared that they did not believe a word Cipriani and his friends said.

After having been the subject of talk for some time, his case was gradually forgotten. There were rumours that Cipriani had gone or had been sent to Paris, that he might be seen or treated, but the same difficulty met him there as elsewhere ; some believed what he said, others did not. He came back to Florence after some time, and his health not being seriously disturbed, he attended to his occupation, occasionally seeing some medical man on account of unpleasant symptoms manifesting themselves now and then, but on the whole, his health was fairly good. His appetite was good, he could eat anything and everying, he drank like other people, the common wine being rather acid and sharp. About six months ago, however, his health gave way, his appetite failed, vomiting occurred occasionally and he began to fear that he was being slowly poisoned, he again consulted medical men and they unanimously told him that the only thing which could be done would be to open over the fork and liberate it. He was greatly alarmed at the prospect of an operation and put it off several times, however, the symptoms became so distressing and alarming to him that about a month ago, he went to the hospital of San Giovanni di Dio, and begged that the operation might be made.

The Professors Rosati and Catani made no delay in carrying out his wishes. They diagnosed that the fork had passed into the intestines and with all antiseptic precautions, they operated and removed the fork, and so skillfully, that the recovery of Cipriani was steady and rapid ; no symptom of fever shewed itself during the convalescence and at present he is apparently well, and stronger than he had been for a long time previous to the operation.

This case, it might be said, has nothing to do with dentistry, but I think that with a little reflection, it will be seen that it ought to be well pondered over by members of our profession, for we can well and honestly calm the agitation of a patient who may have swallowed artificial teeth, even when there are several, by reflecting how poor Cipriani went on for 15 years, with a fork in his stomach and intestines, without suffering any very bad symptoms.

The length of the fork is 21 centimetres, or 8 inches and a quarter; the breadth is 2½ centimetres or just1 inch ; the height of the bend in the fork is 1¼ centimetres or about half an inch.

The fork is not corroded, it has lost very little, evidently, of its substance, the points of the teeth or prongs, of which there are four, are brilliantly clean and bright, they look as if they had been gilded ; the other part is oxidized slightly, and dark, but as I said before, evidently not eaten away. Where the four prongs unite, there is an incrustation of apparently calcareous substances, tolerably thick. The fork is one of the same metal, the handel is not different in any way to the prongs. Plackfong is composed of 50 parts copper, 25 zinc, and 25 nickel. The operation was performed on April 30th.

ON THE PHYSIOLOGICAL ACTION OF COCAINE ON THE LOWER ANIMALS AND MAN, AND ITS USE IN DENTAL SURGERY.*

By George Cunningham, B.A. (Cantab.); D.M.D. (Harvard), L.D.S. (England).

It having been suggested that some authoritative utterance should go forth from this Society as to the value and use of cocaine in dental practice, with the view of removing the suspended judgment of our profession on a matter of so great importance, I need have no hesitation in bringing before you certain carefully recorded cases in which my experience in the use of drugs differs most materially from that already laid before this Society. As for some time past I have been endeavouring to investigate the matter in the laboratory as well as in private practice, and as the series of investigation was not complete when I heard the subject was to be brought before you this evening, 1 must claim the indulgence of the members of this Society for a certain hastiness of preparation in my communication on so important a subject as the Physiological Action of Cocaine.

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* A paper read before the Odontological Society of Great Britain.

With regard to the local application of cocaine and its salts, I think there can be no doubt that it has established for itself a permanent place in the dental pharmacopœia, though it has failed to fulfil the too sanguine anticipations made with regard to it on its first introduction. Any incidental allusions to local applications in the experiments or cases herein recorded, are therefore comparatively of little importance except in so far as they may serve to throw some light upon the action of the drug by injection into the system.

After the very favourable reports on the use of the drug by injection in the communications of Messrs. Hunt, Brunton, and others, I felt justified in employing it in private practice. With what results is shown in the table later on.

Observations on Cold-blooded Animals.—Experimenting investigation shows that cold-blooded animals are much more suceptible than warm-blooded animals to the action of cocaine. It is important to note its effect upon the heart, the circulation, and the nervous system as affecting sensation and reflex action.

Several experiments which I have made on the general and local action of cocaine on the frog need not be detailed here, as they were found to agree with the numerous experiments recorded by other investigators (Von Anrep, Biggs, Mays).

Heart.—The two following experiments were made to ascertain the action of cocaine upon the heart, which is fairly shown by the accompanying tracings.

Experiment 1.—Frog pithed, medium size; 1 per cent solution of cocaine hydrochlorate applied. The apex of the ventricle was attached to the lever recording on a revolving drum. After application of cocaine solution, the pulsations of the heart became first slower and more forcible, and then the force of the pulsations diminished. Ultimately, after further applications of cocaine, the contractions became very feeble and slow, until arrested in diastole. The time trace indicates seconds.

Experiment 2.—Frog curarised, treated as in the former experiment. A few drops of a 1 per cent. solution were placed in the abdominal cavity, producing changes in the heart-beat similar to those in Exp. 1, but only very slightly marked. Hardly any more perceptible change was produced by injecting into one leg under the skin. Very soon after local application to the heart the effects appeared more strongly marked: slowing of the pulsations, which were at first more forcible than originally, then both force and rate diminishing. In this case an irregularity in pulse-beat was seen, soon followed by trigeminal and bigeminal beats, then slow weak beats, until the complete arrest of the heart in diastole took place.

According to Von Anrep the ventricle is first attacked, while the auricles continue to contract with their usual rhythm, but they also are weakened at a later stage.

The characteristic action of cocaine on the heart of the frog is to decrease the frequency and to increase the force, followed by the diminution in both the force and frequency of the pulsations, with the final arrest of both auricles and ventricles in diastole,—not in systole, as in the case of morphine, digitaline, caffeine, and other drugs.

This characteristic arrest of the heart may be produced by maximal or continued minimal doses, as shown in the tracings

According to Dr. Mays, of Philadelphia, another characteristic of cocaine is the suddenness with which it depresses the nervous irritability of the heart.

Blood Vessels. The effect of the cocaine on the blood vessels is well shown in the following detailed experiment.

Experiment 3.—Frog curarised with the tongue spread out for the observation of the blood vessels under the microscope (micrometer used with a Zeiss A objective and Hartnach No. 3 eye-piece).

P.M.	
4·40	Artery corresponds to 6 spaces, vein to 9.
4·42	A few drops of $1^{\circ}/_{0}$ solution of cocaine hydrochlorate injected into the dorsal lymph space.
4·46	No change; circulation good.
4·47	½ c.c. $1^{\circ}/_{0}$ solution (cocaine) injected Circulation at once quicker and better; some capillaries have flow re-established in them.
4·48	Vein if anothing wider, but not certain.
4·50	No change in calibre of vessels.
4·51	1 c.c. $10^{\circ}/_{0}$ solutton injected.
4·55	No change in vessels or circulation.
4·57	1 c.c. $10^{\circ}/_{0}$ solution injected.
4·58	No change in vessels; circulation slower.
5·0	A few drops of $1^{\circ}/_{0}$ solution applied locally to the tongue—artery 6, vein 8.
5·1	Artery 4, vein 6—narrowing of vessels quite marked immediately after application. Circulation slowing.
5·3	Same local application. Pulsations became at once apparent in the small artery; the current quite slow during the intervals between the heart beats: artery 5, vein 7.
5·4	Artery 4½; pulsations slower and more marked in artery—none in vein.
5·5	Artery 4, vein 7 no change in circulation between beats; current almost at a standstill.

5.8	Local application repeated. No change.	
5.10	Artery 5.	Local application of $10_0{}^{\circ}$ solution.
2.11	Artery 4.	
5.11½	Artery 3.	No change in circulation.
5.12	Artery 3½.	
5.12½	Artery 4.	Local application repeated with exactly same results.

This experiment clearly shows that in this case at least injection even of a large dose did not affect the calibre of the vessels of the tongue, while the local application even of a weak solution immediately produced a marked constriction of both arteries and veins in the part, but more especially of the former. Von Anrep found that injection causes the same effects as local application, viz., marked constriction of the vessels.

Respiration.—Small doses (0·003-0·007 gramme) increase the number of respirations, while at first the inspirations are deeper.

Stronger doses after a short increase of respirations produce a decrease with a great difficulty of breathing.

Large doses (0·025 gramme and upwards) cause a slowing and paralysis of respiration without any preceding increase.

In some cases (2 in 13), after a medium dose, a short arrest of respiration was observed. A short period of increased rapidity of rhythm of the respirations, their depth being diminished, was followed by an arrest for several seconds; then occurred some deep inspirations, which again became superficial until another arrest appeared. It is interesting to note this peculiar affect on the respiration in the frog, as it is exactly the kind of respiratory movements we find to be produced in many of our observations on man.

Nervous System; Sensation and Reflex Action.—For our present purpose it is unnecessary to enter into a detailed account of the action of cocaine on the nervous system of the frog. Suffice it to say that both Von Anrep and Biggs agree in their conclusions, viz.: 1st, that small doses increase the reflex irritability of the cord for a short time; and 2nd, larger doses shorten the period of heightened reflexes and decidedly diminish reflex action during a period of longer duration, or may lead to a complete arrest of all reflexes.

The irritability of the sensory fibres is heightened by small doses, which, however, exert no influence on the motor filaments. By large doses the sensory filaments are almost completly paralysed, and the motor filaments are greatly diminished in irritability, but are never completely paralysed.

Several experiments on ordinary nerve muscle preparations were unsatisfactory owing to the torpid state which frogs exhibited at the time (March).

The line of investigation was interrupted early in April by the discovery of how completely the experimental work on the frog has been done by Dr. Biggs, of New York (see "Journal of the American Medical Association," Chicago, 1885, IV, 57-62), and of the very extensive series of experiments on frogs and warm-blooded animals performed by Von Anrep, as far back as1878-9.

Observations on Warm-blooded Animals.—The investigations of the latter extended over a considerable time, and included observations on a large number of rabbits, dogs, cats, and pigeons.

With doses proportional to the weight of the animal, a very varying sensibility to the action of cocaine was observed. Dogs show greater sensibility than rabbits, while cats are even more susceptible, and pigeons less so.

A short account of the most characteristic changes in the dog, described by Von Anrep, will enable us to better understand the effects produced on the human subject, which do not yet seem to have received the consideration they deserve.

Dogs (eight experiments). Even doses of 0·005 gram per kilogram give rise to slight toxic phenomena. The dog becomes restless and excited, and keeps running about and barking. The pupil is dilated. All these symptoms are of short duration, and vanish completely in half-an-hour.

Passing over the effects of intermediate doses, characterised by a longer period of seemingly pleasurable excitement, it is found that with doses of 0·015 gram per kilogram immediate toxic effects are produced. The whole aspect of the dog is suddenly and visibly altered. It remains standing on one spot in apparent anxiety. It seems no longer able to recognise the persons around ; it becomes restless and trembles violently. Continual pendulous movements of the head from right to left ensue and increase in intensity, as also do the tremors of the whole body. Inspiration is strongly accelerated, the pupils are dilated, the skin is quite hot, and the mucous membrane of the mouth dry. This condition lasts from fifteen to twenty minutes, when it suddenly changes to a state of pleasurable excitement, during which the animal runs about and wags his tail. This stage lasts from ten to twenty minutes, when a further change takes place. The animal seems rooted to one spot, and when called upon, despite his apparent willingness to obey, appears unable to answer the call.

These phenomena last from three to four hours, when the dog gradually becomes quieter, its respiration normal, the raised temperature of the skin falls, though a little fatigue and sleepiness still remain.

A larger dose, 0·02 gram per kilogram, produces more intense symptoms of a similar kind. Of these we need only note the loss of equilibrium and of power over the muscles of his limbs, and the laboured breathing. In twenty to thirty minutes after injection, violent convulsions, prolonged swimming-like movements of the hind legs, opisthotonos, irregular respiration, loss of consciousness, are all present and last about an hour, when the usual fitful signs of recovery begin to appear. Dejection, sleepiness, want of appetite, and indifference to everything mark the final stages of recovery. Dogs are found to vary in the degree of their susceptibility to the effects of cocaine.

A few remarks on the action of cocaine upon some individual organs and functions merit our consideration.

1. *The Brain and Spinal Cord.*—From observations of the general phenomena in all animals, we have experimental proof that the action of cocaine is especially directed upon the nervous system, and produces great changes in physical functions and manifestations. The heightened reflexes, the enormous accelerations of the respiration, and of the heart activity, the pendulous movements of the head, the swimming motions of the extremities, the difficulty to retain the equilibrium, the lack of co-ordination, the convulsions, and the irregular spontaneous muscular contractions, all prove that the cerebellum, the medulla, and the spinal cord are all more or less affected by cocaine. Experiments in which the spinal cord was severed, show that the convulsions are instantly suppressed by section of the cord at the level of the medulla oblongata, and are not produced at all by cocaine injections after section. Section at the sixth dorsal vertebra suppresses only the convulsions in the posterior, and not those in the anterior extremities.

It is evident, therefore, that cocaine has a distinct action on the brain. That the spinal cord itself is influenced is shown by the fact that after section its reflex action is increased.

2. *Respiration.*—In dogs small doses produce acceleration

of the respiration ; while medium doses quickly lead to a very great acceleration interrupted by brief periods of cessation. After each cessation the animal inspires deeply and slowly, then more and more swiftly and superficially until another period of cessation occurs. Large doses, after a period of acceleration, lead to a serious dyspnœa, or even to complete arrest of respiration.

Death from cocaine in warm-blooded animals occurs by paralysis of the respiration.

3. *Heart* (eight experiments, Von Anrep).—Small doses do not affect the heart ; medium doses cause a strong acceleration of the heart contractions. In dogs the pulse may be three times the normal, though the normal form of the curve is unaltered and the beats are not weakened.

Large doses result in a slowing of the pulse, and of the contractions of the heart. Complete cessation does not occur, the heart still continuing to beat even after arrest of the respiration.

The inhibitory action of the vagus on stimulation of the nerve in the neck is lowered by small and completely paralysed by medium doses.

4. *Blood Pressure.*—The changes produced in the blood pressure belong to the most important phenomena produced by cocaine. Medium doses are followed by a very considerable increase of blood pressure ; and large doses, after a temporary increase, by a rapid fall almost to the zero point of the blood pressure.

5. *Peristaltic motions in the Intestines.*—Adopting Rossbach's method of examination of the abdominal cavity, Von Anrep observed that medium doses provoke intense movements of the small intestines, and also increase those of the large intestines.

By contraction of the blood vessels the intestines become pale and energetically peristaltic for some five to ten minutes, after which the vessels dilate and the peristalsis becomes weak or ceases completely.

Large doses intensify this action, while the vessels become gorged with venous coloured blood.

6. *The Pupil.*—In all warm-blooded animals, without exception, mydriasis was observed as the result both of local application and of administration by injection.

The dilatation of the pupil may last from one hour to two days, according to the dose, and is one of the last symptoms to disappear.

Salivary Secretion.—Contrary to previous observers, who ascribed the production of an increase in the mucous secretion, Von Anrep invariably noticed a decrease or drying up of the same, though it did not last long. He describes it as similar to that produced by administration of atropine. From several observations on man, it is quite certain that a cessation of the salivary secretion frequently, if not constantly, follows the injection of even a small dose of cocaine; therefore it may seem to act by paralysis of the secretory nerves, as atropin does. It might, however, possibly be due to its known power of constricting the calibre of the blood vessels.

(*To be continued.*)

AN ABSTRACT OF AN ADDRESS.

By Mr. Fred. Bullin, J.P., L.D.S., Eng. *President of the Midlands Branch of the British Dental Association.*

(*Concluded from page* 510.)

In the provinces, the L.D.S. is often called to the bedside of a patient by the M.R.C.S., to administer the nitrous oxide gas, when a short operation has to be performed, and it is considered unsafe to use chloroform or ether.

I was much amused, some few years since, while having the honour of sitting at the table of a friend, next to an L.D.S., M.R.C.S., of the mature age of 24. I listened attentively to a description of his extended knowledge of the administration of anæsthetics, and of nitrous oxide gas in particular, and of the hair-breadth escapes he had witnessed, when the patient had been suffering from some cardiac affection.

I ventured, of course with great humility, to take exception to his opinion of "the great risk incurred," if only it were cautiously administered, even in the use of chloroform or ether, maintaining that there was practically no risk in the use of nitrous oxide gas, when thoroughly administered.

He then asked if I had ventured to administer it without an M.R.C.S. being present. I replied, "Thousands of times," and cited the following case, which had occurred a few days previously:—"A noble lord drove to my house, in company with his son, aged about 23, who was suffering from an affection of the heart, and had to be carried by two men from the carriage to the operating chair. His father informed me of his condition, and asked me if I considered it safe to administer the nitrous oxide gas. To satisfy him I used the stethoscope, and assured him that I should have no hesitation in administering it. The anæsthetic was thoroughly administered, and I removed an upper molar, of course painlessly." My young friend was amazed at my indiscretion, and commenced to give me a little friendly advice for my guidance in the future; but to save him the trouble, I said, "My dear sir, I administered chloroform to that noble lord himself, about two years before you entered upon your present state of existence."

This statement saved him the trouble of exhibiting to my mental view visions of coroners' inquests, the prison cell, and the gallows.

I have heard two reasons assigned for such treatment, and they constitute a strong argument in favour of our becoming a distinct body :—

Firstly—Because the annoyance felt by the medical profession, at the time we became "a fragment" grafted into that body in 1859, has not died out, but is inherited by the younger members.

Secondly—Because it is a fact that we have upon the Dentists' Register a certain number of barber dentists. This fact we deplore, but we do not deny. But there are not so many in number as there were upon the first Medical Register. We may also remind the members of the Medical Council, that to-day there are hordes of barber surgeons and barber physicians in this country, holding college degrees, with their names upon the Medical Register, who are selling toilet requisites over the counters of dirty shops, or disgracing their profession by practising as specialists for the cure of nervous debility and other unmentionable ailments; issuing pamphlets to entrap the unwary, and extorting money from those, who, they know, dare not expose their misdoings, lest they themselves should be exposed to their friends, as the victims of a vicious life. No doubt the M.R.C.S. or M.D. will say, such an one is "*un mauvais sujet.*" Granted; but no worse in the dental than in the medical world; and "they who live in glass houses should not throw stones."

Need I say that our very presence here to-day, as a separate Association, as distinct from the Medical Association, adds force to my contention, that we are, and ever shall be, a separate profession. Why, then, should we not be a representative body, with our own Council, and our own Board of Examiners, and stand in a position to obtain Dental Acts of Parliament, and be entrusted with the management of our own affairs? The surgical degree has been the bane of our profession, and I am weary of hearing some of our esteemed brethren urge dental students to go in for the M.R.C.S. diploma. The sound has been ringing in our ears for years, and with this result, that nineteen out of twenty have not done so since 1859, and will not do so, for the simple reason that they select the dental in preference to the medical profession. They even consider that the L.D.S. diploma, which takes a provincial man five years to gain, and costs him more money, is a higher one than the M.R.C.S., which can be obtained by only four years' application, and with a less expenditure of money. If the advice so kindly given be only moderately adopted, you perpetuate the evils of the past—two classes of dentists are created, one feeling itself supremely superior to the other. A student is asked to spend extra time and money in gaining a diploma, which, when obtained, professional etiquette forbids him to carry into practice, under pain of being ostracised by other members of the "charmed circle."

I am not alone in the belief, that many of our brethren in large towns have a craze for the multiplication of degrees. A wag has said that in cases of men of short stature, a degree adds an inch or two to their physical as well as to their mental stature. It certainly prevents them from seeing clearly through the L.D.S. spectacles.

At the risk of being charged with levity, I would illustrate my meaning by recalling a burlesque to the memory of those who have spent a few hours in enjoying the mirth-giving Japanese comic opera of "The Mikado." You will remember a certain important personage—"Pooh Bah"—who traced his ancestry back to the protoplasmal atomic globule, and considered it to be his degrading duty to act as First Lord of the Treasury, Lord Chancellor, Lord Chief Justice, Commander-in-Chief, Lord High Admiral, Master of the Buckhounds, Archbishop of Tepatu, and Lord Mayor, both active and elect, "all rolled into one." When Ko Ko was about to marry Yum Yum, he consulted Pooh Bah as to the amount he would advise him to expend on the marriage festivities, requesting the favour of his advice.

"Certainly," was Pooh Bah's reply. "In which of my capacities? As First Lord of the Treasury, Lord Chamber-lain, Attorney-General, Chancellor of the Exchequer, Privy Purse, or Privy Seal ?"

Ko Ko—"Suppose we say as Private Secretary."

Pooh Bah—"Speaking as your Private Secretary, I should say, 'As the city will have to pay for it, don't stint yourself: do it well!'"

Ko Ko—"Certainly, as the city willl have to pay for it. That is your advice ?"

Pooh Bah—"As Private Secretary. Of course you will understand that as Chancellor of the Exchequer I am bound to see that due economy is observed."

Ko Ko—"But you said just now, 'Don't stint yourself: do it well.'"

Pooh Bah—As Private Secretary."

Ko Ko—"And now you say that due economy must be observed."

Pooh Bah—"As Chancellor of the Exchequer."

And so follows a succession of plights into which poor Pooh Bah finds himself drawn, by undertaking so many offices "all rolled into one."

Now observe the parallelism in the following parody :—

L.D.S. to M.R.C.S.—"As a premium of 150 guineas was paid by my sire, in addition to my three years' unpaid services to a dentist recognised by the College of Surgeons, to enable me to comply with the first part of the dental curriculum, and afterwards fees to both the Middlesex and Dental Hospitals, between which I worked hard for two years, and, as the result, gained the L.D.S. diplomas; would you not advise me at once to set to work and reap the financial fruits of my labours ?"

L.D.S., M.R.C.S.—"Certainly ! You command my respect. You have failed in nothing, or you would have been 'ploughed.' You have deservedly gained the highest dental degree in Europe. Go with my best wishes, place your name on the Dentists' Register; practice your profession in the interests of suffering humanity, and, by industry and thrift, lay aside part of your income for old age."

L.D.S.—"Certainly ! Your advice is both wise and kind. I will follow it, to the delight of my people at home."

L.D.S., M.R.C.S.—"But, of course, you will understand that if you wish to become a professional man, as distinguished from trade, and to be one of the elect, and see your name upon the Medical rather than the Dentists' Register, then I strongly advise you to go in for the M.R.C.S."

L.D.S.—"But you said just now that I possess the highest dental diploma in Europe, and you advised me at once to practice my profession."

L.D.S., *M.R.C.S.*—"As an L.D.S."

L.D.S.—"And now you say, 'Go in for the M.R.C.S.'"

L.D.S., *M.R.C.S.*—"As a Surgeon—one of the 'charmed circle'—I do advise you to go in for the M.R.C.S. Those initials are so respectable, although useless in dentistry! But you know many useless things in this world are ornamental. And, above all, you may escape from seeing your name on that plebeian roll, the Dentists' Register, and may even be elevated to the membership of that mysteriously fastidious fraternity, the 'Association of Surgeons practising Dentistry.' Follow my advice, and your position will be much more dignified, although, I am bound to say, not more useful."

Seriously I believe this, in some degree, shows the difficulty many of our esteemed brethren labour under in dealing with the present and future of our profession. It was the cause of the mistake made prior to 1859, and it will cause you some trouble in securing independent dental legislation in the future.

In the remarks I have earnestly made, from the deepest feelings of conviction, I wish to place on record, that there are amongst us to-day many honourable exceptions to the rule—men with the L.D.S. and M.R.C.S. diplomas, whose hearts are devoted to the present and future welfare of our profession, and who have no sympathy with the fantastic gentlemen I have described.

Throughout, I have studiously avoided the use of names, for I have no desire to hold up to ridicule or to pain any individual member of our profession. There ever will be, in every profession, men who occupy the "Boxes" and "Dress Circle," and look with disdain upon their brethren, whom they place in "Pit" and "Gallery." Such usually strive to lead; but they are the enemies of any useful reforms. I have endeavoured to point out the great mistake of 1859. But while doing so, I give those who made it full credit for the best intentions, their mental vision being clouded.

Some, whose features are still in our memories, are gone to their rest. The minority only of them remain; and even they, or certainly their sons, whom we all esteem, as bearers of honoured names, will in due time help you in your legitimate and forward movement in dental reform.

This is not the place or occasion for introducing politics. I may be excused, however, for saying that, as a loyal subject to the British Throne, I am not in favour of what is popularly known as "Home Rule." But I think I see, in the not very distant future, the principle of "Home Rule" exemplified in the dental profession. What element is wanting, that is requisite for making ours an independent profession? You have in your ranks men of science of the highest education and culture; men whom Her Most Gracious Majesty has delighted to honour; many, who in addition to their having the L.D.S. diploma, are Fellows of the Royal Society; M.D.'s of the College of Physicians; M.R.C.S. and F.R.C.S. of the Colleges of Surgeons of the three Kingdoms, and an army of those who hold "the highest dental degree in Europe," as well as those of the Transatlantic Universities of Harvard and Michigan, down to the representative of the old partners of our ancestors, the barbers. Surely these must represent the collective dental wisdom of the universe, and be quite sufficient to establish your claim to Dental "Home Rule."

In my note-book, I had jotted down other topics, upon which I should have wished to say a few words; but I feel that I have already trespassed too long on your patience.

In conclusion, I ask you to believe me when I say that nothing but a sheer sense of duty to, and a deep regard for our younger brethren's future welfare, would have induced me to enter upon this formerly much-debated subject. Of all men, those of us who have individually, through three decades, striven, by avoiding unprofessional conduct, to elevate the profession to which we belong, are personally least interested in its future; for of necessity we must soon lay down our weapons of warfare, and retire from the fight, and pass away, to be no more seen. But it would be culpably selfish if, with the experience of the past and the present, by which alone we get a glimpse of the future, we did not express our conviction, that the dental profession has a great future before it. The advance of dental science has been most rapid, and is still progressing. The demand for dental aid has marvellously increased, and is still increasing; and the dental profession is destined to be second to none in existence.

Then, I say, go on raising its social status, by individual conduct in your private practice; and, by combining with the British Dental Association, and by forming local branches of it, throw aside the paltry pride and professional jealousies of your forefathers. March shoulder to shoulder with brethren who may not be quite up to your standard intellectually or financially. The efforts of all will be needed in the common cause of dental reform, social and legal. Knock hard, as a profession, independently, at the door of St. Stephen's, and, as yours is a righteous cause, you will overcome all opposition, and victory will be yours.

RECENT RESEARCHES ON SYMPTOMATIC ALVEOLAR ARTHRITIS.*

By Dr. E. Magitot, M.D., Paris.

Corresponding Member for the Odontological Society of Great Britain.

(*Concluded from p.* 521.)

It is very important to note the various conditions presented by those who are the subjects of Symptomatic Alveolar Arthritis. The age at which this affection is generally observed is not either in youth or in advanced age, but between the thirtieth and fiftieth year of age ; it is equally frequent amongst men and women, and amongst the latter it appears often accompanied with the complex phenomena of the "menopause." In a certain number of cases Symptomatic Alveolar Arthritis supervenes during a state of perfect health, and whatever pains we may take to find out the cause we cannot recognise it either in the local conditions of the mouth, or in any appreciable disorder of the economy ; nevertheless the temperaments which appear predisposed to it are almost exclusively of the sanguine and bilious varieties ; constitutions appearing in other respects vigorous, yet subject to cephalic congestion. Persons of sedentary occupations, those who are engaged in an office, are particularly predisposed to it. We have already mentioned several times the relationship produced by the appearance of the crisis, attending the cessation of the menstrual discharge, or of the hæmorrhoidal flux. This influence of temperament hasagain a close connection with heredity, which in certain families has appeared to us to influence the appearance of the disease ; thus it has made its appearance in members of the same family during two or three generations, and in analogous conditions of age and constitution.

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* Read before the Odontological Society of Great Britain.

Certain intestinal phenomena are observed, whether they be coin cidences or whether etiological conection. Habitual constipation is met with in the subjects attacked, and one of the physicians to the Paris Hospitals, M. Fidal, has observed that they often present dyspeptic phenomena. Perhaps these latter may have been due to difficulties in mastication ; in any case we have personally had the opportunity of verifying this assertion. Some general or diathetic conditions exercise a considerable effect on the production of this disease. Thus eruptive fevers have, as is known, sometimes caused a falling out of the teeth, a result produced by Symptomatic Alveolar Arthritis.

We recently observed in a little girl seven and a half years old, alveolar arthritis following a severe attack of whooping cough. The temporary teeth, and above all the permanent teeth already erupted, were surrounded by pads of inflamed gum, with alveolar suppuration and loosening of the teeth (one out of the first permanent molars had already fallen out, and another was greatly threatened). The affection appeared to consist in an ulcerative stomatitis and a simultaneous Symptomatic Alveolar Arthritis.

Gouty and rheumatic subjects often present this kind of arthritis, as also do individuals attacked with anæmia caused by long illness ; but there are no general lesions which exercise a graver influence on the production of this disease than those of albnminuria and, above all, diabetes. As regards the first we are dealing here, as is well understood, not with symptomatic albuminuria, but with what is properly called Bright's disease.

In Glucosuria this phenomenon is absolutely constant, and even constitutes one of the primordial signs of the morbid conditions. In fact it is mostly found in the descriptions of authors that at the commencement of diabetes the teeth become loose and carious. This assertion concerning caries is not correct, but the first is perfectly so, and corresponds to the Symptomatic Alveolar Arthritis which follows in its development the same course and the same progression as the general disease, causing at its termination the loss of a considerable number or the whole of the teeth. Such are the results of our researches, which we communicated to the Academy of Medicine, under the name of "A Treatise on the Value of Diagnosis in Saccharine Diabetes of Alveolo-dental Osteo-periostitis."*

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* "Acad. de Médecine de Paris." Seance du 27 Dec. 1881.

We have not recognised in any way that any other conditions of the health were in connection with Symptomatic Alveolar Anthritis. Thus certain diatheses, such as syphilis, in which the tertiary symptoms affect the bones and fibrous tissues, do not appear to produce it ; mercurialisation and gingivitis, however great its severity, do not appear to become either the principal or even the occasional cause.

PART III.—TREATMENT.

We do not wish here to enter fully into all the the considerations concerning the treatment of symptomatic alveolar arthritis. We have detailed them to a considerable extent in our previous publications,* but we should like to particularly insist on the value of the action of a certain class of remedies which enter into antiseptic medicine.

We are, in fact, confronted with a septic and contagious disease, of which the essential symptoms are an abundant alveolar suppuration, loosening and displacement of the teeth, recession of the gums—in a word, all the conditions suitable to make of this lesion a spot favourable for the action of septic agents.

These agents undoubtedly exist in this disease. The microscopic preparations of pus proceeding from alveolar diseases have betrayed the existence of a large number of organisms of very diverse forms, amongst which it is, if the truth be spoken, still difficult to distinguish the variety which ought to be regarded as the essential and exclusive morbid agent of this disease. Further researches, we are convinced, will enable us to realise the culture of the pathogenic agent peculiar to Symptomatic Alveolar Arthritis.

Some interesting experiments† undertaken by MM. Malassez and Galippe for this purpose have already put beyond doubt the parasitic nature of this disease, and it is also confirmed by the frequent propagation of the disease from one alveolus to another in the same mouth, as well as by contagion from one individual to another, as observed by different authors and ourselves. All that we now wish to insist upon is the value of antiseptics in the treatment of this disease. With this view we would recommend such applications as alcohol, carbolic acid, perchloride of mercury, &c. For this purpose we have selected the following formulæ.—

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* "Arch. de Medecine :" 1867. Tome II, p. 35.

† "Comptes rendus et Memoires de la Soc. de Biologie :" 1884 ; p. 321.

No. 1 ℞	Hydr. perchlor. ...	0 grms. 50 c.g.
	Aq. Destil.	1000 ,,
No. 2. ℞	Acid carbolic crystal Ether ...	— aa 5 grms.
	Alcohol	10 ,,
No. 3. ℞	Acid borac.	10 grms.
	Aq. Destil.	500 ,,
	Alcohol	50 ,,

To these formulæ we could have very well added others by employing other antiseptics, such as the permanganates, salicylates, salicylic acid, &c. It will be necessary besides to have recourse to the employment of medicines which will modify the local condition, as well as to attend to the treatment of the general health, paying due regard to the diatheses which influence the disease.

Thus the treatment of Symptomatic Alveolar Arthritis can be summed up in the three following paragraphs :—

1st. To render antiseptic the alveolus, the seat of the arthritis.

2nd. To modify the condition of the affected tissues by the application of astrigents and caustics.

3rd. To treat the general conditions or diatheses which govern the local manifestations.

We will not refer again to the employment of antiseptics.

Concerning the second point—that is to say, the local treatment of the affected tissues—it is known that we have advocated applications of chromic acid, employed chemically pure and monohydrate, as a powerful caustic susceptible of acting on the vitality of the tissues of the gum and, above all, on the dental ligament. Let us add that chromic acid may also be considered at least equal as an antiseptic to any of the drugs usually employed in that sense. We can mention again among the modifying agents, pure carbolic acid, chloride of zinc, and lastly heat applied by means of the galvanic cautery.

Finally, as concerns the diatheses, the dominating influence of which we have already referred to, we shall not here indicate the treatment so as not to exceed the limits of this paper.

PART IV.—CONCLUSION.

From the preceding considerations we believe we may deduce the following conclusions ;—

1st. The affection characterised by alveolar suppuration, by the loosening and falling of the teeth, ought to be considered as a true Symptomatic Alveolar Arthritis, septic and contagious, and which ought henceforth to remain known by that name in surgical nosography.

2nd. This affection is most often met with under the influence of certain general conditions and diatheses, and as secondary to eruptive fevers, &c., of which it may form either a complication or a sequela.

3rd, The therapeutics of Symptomatic Alveolar Arthritis ought to consist essentially in the employment of antiseptics, of local alteratives, astringents, or caustics, without prejudice to the treatment of the general conditions which are its determining causes.

AN INSTANCE OF THE COCAINE HABIT.—There is at present considerable excitement in the United States regarding the excessive use of cocaine. Some patients to whom it is prescribed appear to use enormous quantities of it. For example, Dr. J. E. Clark, Professor of Chemistry, Detroit College of Medicine, mentions (says the *Chemist and Druggist*) the case of a young man for whom he prescribed an 8 grs. to the oz. solution of cocaine hydrochloride for hay fever. This acted like a charm, and he heard no more of the case, until one day he was in a pharmacy, and was asked by the proprietor, "Do you know Mr. —— is using about eight dollars' worth of cocaine a week?" The young man liked the cocaine so much that he had gone on until he had become temporarily insane, had to retire from his business, and be under strict supervision until the craving disappeared, a a space of about three months.

British Journal of Dental Science.

LONDON, JUNE 15, 1887.

THE address delivered at Chester by the President of the Midland Branch of the British Dental Association (the concluding part of which is printed in our present issue) calls for more than a passing notice. It is far from our intention or desire to offend the susceptabilities of a practitioner so esteemed and valued as the author of this remarkable production, but as we have hitherto freely criticised the proceedings of the Association, we must in justice to it and to the profession which we serve, speak with equal freedom on their behalf when they become the objects of what we must say is unmerited reprobation.

The address which we have published reads like a piece of ancient history in which the author has so effectually mixed up the past and the present that it is almost impossible to unravel the complex line of argument—if argument it can be called—which has been pursued.

After a description of the mechanical processes in vogue some thirty years ago, which, by the way, does not show a very extensive acquaintance with the resources of the workrooms of the period. The author censures the rising generation for the want of appreciation of our indebtedness to our American *confreres* for their many inventions which have now become common property and then taxes their instructors with concealing from their pupils their indebtedness. We are not ourselves aware of any such course being followed in our dental schools, neither can we conceive it to be the duty of a teacher to give an account of the source of every process or theory which he may have to introduce to his pupils.

What a course of lectures would become if conducted on such principles is something too appalling to contemplate, and if it ever were adopted we could not feel too thankful that our school attendance is a thing of the past.

The catagorical reasons given for this reticence on the part of our teachers are almost too absurd to be put on paper, but the third reason, viz., that "once upon a time" bogus diplomas were issued by a "fraudulent man" we notice, not because we believe for one moment that it would lead our teachers into such a mean course as has been imputed to them, but because it reads very like an attempt to relieve our American brethren of the responsibility which, however disagreeable, such proceedings attach to them, and we have documents in our possession which tell us that the "once upon a time" is not so remote as the expression would lead us to believe.

We are then told on the authority of Dean Howson—a most excellent parson, no doubt, but a gentleman whose opinion we do not consider helps us in the matters before us—that "the educated American is not a braggart." We have always thought that the same might with truth be said of any educated gentleman, and we also think that the self-assertion and the self-laudation of the American Dentists, with the exception of a limited few, show that they are not given to hide their light under a bushel and quite exonerate our teachers from instructing their pupils in their endebtedness to American ingenuity. That bragging is not confined to our American brethren is only too evident by the account of the exploits of an L.D.S. which is given in another part of the address. We do not know how far the educated American who is not a braggart will appreciate the championship so freely accorded to him, but he may well exclaim "save me from my friends."

In what may be called the second part of his address the author states clearly that the union with the College of Surgeons was one of the greatest mistakes ever perpetrated by a body of well-meaning men and that they so acted because the majority of them possessed the M.R.C.S. This last remark cannot well be borne out by facts, for those who know best are aware that many of the promoters of that movement have not that diploma and that the main instigator of the scheme and the one to whom the profession is chiefly indebted for its adoption by the college, held no diploma whatever. The first fact cited in proof of the disastrous alliance was that the profession was not consulted. A few lines further on we are told that there was then no such profession in existence. How then, we ask, could it be consulted ?

The second proof is that it was formed against the wishes of the great body of the medical profession. We were not aware that the medical profession was ever consulted on the matter, or that any necessity ever arose for following such a course. The College of Surgeons has power to act as it did without consulting the profession at large; and, moreover, the great body of the medical profession is not made up solely of members of the College of Surgeons of England.

The third proof is that the Dental Charter did not confer the advantages of members of the College. The answer to this is, that it was not so intended; for if it had, no new Charter would have been required, and we much fear that the minority who "stood the test of the examination of this novel tribunal" would have been very much reduced if such a position had been taken up by the College. As to the Dental Charter not giving us "a legal status as a profession," no Charter procurable by the College ever could do such a thing for us, or for any other set of men, until examinations were made compulsory by an Act of Parliament. The College may be empowered to grant diplomas, but it requires more than a Charter to give a professional status.

The application to the College of Surgeons to institute an Examining Board for Dentists was from the first advocated by this journal, and the response made to it by dentists in practice, and by gentlemen entering the profession, enabled the Dental Reform Committee to show that the body of dentists were worthy of the position which they sought, through the legislature.

But the fourth reason given is the most astounding of all viz., that "the M.R.C.S. never was, and never will be, a dental degree." In this we entirely agree, and hence we see the necessity for the L.D.S. The author gives considerable space to establishing this position—which seems to us very like setting up straw men to be knocked down—but we think he claims rather too much for the L.D.S., when he holds up its possessor as the principal factor in effecting a cure in a carriage accident where the "wheel has passed over a patient's maxilla."

Without any denegation of the Dental diploma, we are of opinion that an L.D.S. would be much more in need of the M.R.C.S. than the reverse, were he so placed as to have to treat such a case. Such accidents are old, and have been treated successfully before the L.D.S. was invented, and the grave constitutional disturbances which follow such occurrences are certainly beyond his training, and quite out of the routine of his practice.

Such a course of reasoning is unreal and misleading. "What a dust we make," the fly said to the cart-wheel. "We performed beautifully," the blower said to the organist. By such assumption the dentist only makes himself ridiculous and plays the roll of a splint-maker. It would go beyond the bounds of our space to follow the author through his description of the discussions in the Medical Council, especially as this discussion was only over the administration of an Act of Parliament, on which the whole body of dentists had been consulted again and again.

But, after all—even if all four positions could be shown to be as real as they are fallacious, we cannot see how they prove a "mistake." Can it be shown that the progress which commenced with the establishment of the Examining Board of the College of Surgeons, has been in the wrong direction? That it is false, and hollow, and fictitious? That the profession has not gained in every possible way by the course which has been pursued? This is what must be shown to prove a mistake.

Can any one prove that we would have been better off if the College of Dentists has pursued its career? Can it be shown that if we had gone to Parliament at any time we would have been as successful as we have been in the course we have followed? Those who have been in the thick of the fight—some of them faithful supporters of the College of Dentists, until it forfeited their respect—assure us that they do not believe we would. But to prove a mistake, these are the questions which, if asked, can but receive one answer, and that, in our opinion, a complete negative.

We do not pretend to forecast the future of our profession. If it be true to itself it will work out its own proper destiny, but of this we are assured, that the foundation which its leaders have laid is, on the whole, a safe one, and well calculated to support whatever superstruction may be raised upon it. Education was its base, education has been stamped on every stone that has been added to its height, and education must form its apex, in reality and not in name only.

HONORARY MEMBERS OF THE ODONTOLOGICAL SOCIETY.—Dr. Dudley Wilmot Buxton and Mr. John Bland Sutton, have been elected honorary members of the Odontological Society. Dr. Dudley Buxton's name is well known in connection with his research work elucidating the physiological action of nitrous oxide gas, while Mr. Bland Sutton has contributed very largely to our knowledge of comparative odontology.

UPON THE COCAINE HABIT.—Dr. Mattison, of Brooklyn, has collected a table, giving symptoms, etc., following the use of cocaine; and in speaking of this, the *Journal of the British Medical Association* says, there is little room for doubt that, coesnquent on the "craze" which was created in its favour, cocaine has been used with a recklessness which has produced the most untoward results. On the strength of experiments with large quantities of the drug, the activity of which may have been deficient, or to which the particular patients may have been unusually tolerant, it has been administered and injected, in doses varying from one grain to fifty, for every conceivable purpose, from procuring local anæsthesia during labour to the extraction of a tooth. If want of caution in the employment of cocaine were alone to blame for the sad mishaps of which Dr. Mattison has compiled so appalling a table, the burden of responsibility might reasonably be shifted from the drug to the medical man who used it; but experience has shown that even in what are considered to be perfectly safe doses, symptoms of considerable severity are apt to be produced. At present it is difficult to say with certainty whether the striking differences which are observed with identical doses are due to variations in the quality and potency of the drug, or to individual susceptibility. The present comparatively low price of the drug may possibly act unfavourably on its quality, especially as the competition between rival houses is very severe. This point can only be elucidated by instituting careful inquiries into the source whence the drug was obtained in every case where unexpected symptoms are observed. Next to the ophthalmic surgeons, the dentists showed the greatest enthusiasm in endeavouring to avail themselves of the valuable properties of this modern addition to therapeutical agents. The most brilliant results were reported as obtained on every hand for awhile, but lately not only has the efficacy of the drug for dental purposes been questioned, but the inconveniences and even danger which is apt to accompany or follow its use have been made public. The inevitable reaction against the extravagant pretensions advanced on behalf of this drug has already set in. The sooner its use is restricted to the cases in which it may reasonably be employed, and in doses and with precautions calculated to minimise its drawbacks, the better will it be for medical men and their patients. It should never be forgotten that cocaine is a potent alkaloid not to be trifled with. We have, so far, not had to record many cases of cocaine addiction, except on the part of medical men in the case of their patients; and it is to be hoped that any prospect of this will now be averted.

VERATRINE AS AN OBTUNDENT OF SENSITIVE DENTINE —Dr. Bogue (New York) recommends a certain amount—

about a grain—of veratria will dissolve in about three drops of alcohol. To that put sufficient tannin to saturate it, and then add ten drops of glycerine. It will of course be understood that this remedy must be applied when the dam is in place and the teeth perfectly dry, as it is exceedingly poisonous. One-fiftieth of a grain is a dose. After being in the tooth ten minutes I wash the cavity with alcohol, dry it thoorughly, and find I am able to excavate with little pain.

GOLD AND SILVER SOLDERS.—The process of formulating and compounding an alloy with which to form gold and silver solders, develops what seems to be a fact, that pure zinc—*i.e.*, free from arsenic, antimony, cadmium, etc., will not render gold brittle. Take of chemically pure metals, silver, one part; zinc, two parts; copper, three parts. Melt the copper in a clean borax-lined crucible, add the silver, then the zinc in small portions, with constant stirring with a clay rod. When the denser fumes of the burning zinc pass off, pour from a height into water, or pour into an ingot mould. The resulting "solder alloy" may be used in the place of the metals usually employed in connection with gold and silver for gold and silver solders, with the following results: The solder will follow and retain the colour of the plate used, and will be tough and free from brittleness. The usual method of employing this alloy is to take from four down to two parts of either gold or silver (as gold or silver solder is desired) to one of the alloy, melting together under borax with agitation, rolling to the desired thickness, and marking on one end the carat of the gold used (if gold) and also the proportion of gold, as for instance 20 (20 carat gold), 3 (3 parts gold). The solder formed by the use ot this alloy is easily made, easy flowing, and as strong as the plate from which it was made.

COPYING MIXTURE FOR WRITERS.—The following is recommended:—

Gelatine (cut)	1 oz.
Sugar (Demerara brown) ...	1 ,,

Glycerine	6 ,,
Barium Sulphate	2½ ,,
Water	4 ,,

Steep the gelatine in water 3 oz., and the glycerine, and dissolve by aid of heat; add the sugar, and dissolve. Rub the barium sulphate to consistence of paste with the remainder of the water, and add to the gelatine solution. Pour into tray whilst warm.

Ink.

Aniline Violet	10 grs.
Water	♏ 40

M.

A Soldering Fluid.—Chloride of zinc, so much used in soldering iron, has, besides its corrosive qualities, the drawback of being unwholesome when used for soldering the iron tins employed to can fruits, vegetables, and other foods. A soldering mixture has been found which is free from these defects. It is made by mixing one pound of lactic acid with one pound of glycerine and eight pounds of water. This, according to the *Southern Dental Journal*, is a useful soldering fluid.

Brassing Small Articles.—To one quart of water add half an ounce each of sulphate copper and protochloride of tin. Stir the articles in the solution until the desired colour is obtained. Use the sulphate of copper alone for a copper colour. We are indebted to the same source for the above.

Pyœmia after Tooth Extraction.—A physician of Warsaw reports a case of fatal septic pyœmia from the extraction of a tooth. One of the under molars was extracted, in consequence of which the patient's face became greatly swollen, and on the third day rigors with fever came on. After lingering nineteen days, the patient died. At the autopsy necrosis of the inferior maxillary was found at the point where the tooth had been extracted; the temporal bone was infiltrated with pus, and the dura mater of that side was covered with offensive pus. The soft parts adjacent were infiltrated, and the veins filled with pus.

MEDICAL TREATMENT OF NEURALGIA.—We have several times drawn attention to the value of gelseminum in treatment of neuralgia. The following mixture is a useful form in which to give this drug:—

Tinct. gelsemii, ʒij.;
Tinct. car. dam. co., ʒiv.;
Quininæ sulp., gr. 24;
Acid. hydrobrom. dil. ʒiij.; aq. ad ℥ij.

A teaspoonful to be taken in half a wineglassful of water every three or four hours until relieved.

SUPERNUMERARY TEETH EXPLAINED.—Man's original dentition included six incisors in either jaw; two from each jaw have gradually disappeared; this loss is due to the contraction of the anterior part of the palate; this process of contraction will probably go on and result in the loss of two further incisors; the conical shape of many of the supernumerary teeth indicates a reversion to the primitive type of tooth.

THE EXPENDITURE OF THE GENERAL MEDICAL COUNCIL.—The lucubrations of this august body are said to cost a guinea a minute. The *Chemist and Druggist* gives the following particulars of expenditure:—"The average yearly total income (£8,877 14s. 6d.) includes the receipts from the new edition of the 'Pharmacopœia,' amounting to £881 6s. 4d. Deducting this, the income amounts to £7,996 8s. 2d. The expenditure during the period is as follows:—General Council, £5,679 5s. 0d.; English Branch Council, £875 19s. 10d.; Scotch Branch Council, £444 9s. 1d.; Irish Branch Council, £487 2s. 7d. Excluding the 'Pharmacopœia' receipts, there is thus a yearly balance in favour of income of £1,206 13s. 6d. These yearly balances have from time to time been invested in consols by the branch councils. Investments amounting to £38,169 17s. have already been made. The Committee anticipate greatly increased expenditure, owing to the enlargement of the Council, and as there is no means to meet this outlay, they recommend that the expense attendant upon the meetings of the Council should be reduced. They had considered the advisability of charging medical students a registration fee, but unanimously decided not to recommend this course. The members of the Council will, therefore have to talk less, or meet more seldom in future. It transpired in the course of the proceedings that the Council used to pay a publisher 11s. 8d. per copy for a Medical Register of 421 pages, but that now they get it printed at the Government Stationery Office at a cost of 5s. 3d. per volume of 1,154 pages. In the course of the proceedings the Pharmacopœia Committee reported that, up to the present time, 22,925 copies of the edition of the 'Pharmacopœia' of 1885 have been sold. The production of the work, including the first reprint, has cost £3,485 9s. 3d., and the amount received has been £4,519 6s. 11d. Including 75 copies on hand, this leaves a balance to the good of £1,047 17s. 8d. Another reprint of 3,000 copies from the stereotyped plates has been ordered. Dr. Attfield has submitted a first annual report on the Pharmacopœia."

Abstracts of British & Foreign Journals.

INFLAMMATION OF THE ANTRUM.

By Beverly Robinson, M.D.

(*Concluded from page* 539.)

Accompanies an acute attack of nasal catarrh. This headache does not leave him until he has a moderate or profuse discharge from the left nostril. The discharge is transparent, but yellow in colour. Twelve years ago he had a gelatinous polypus removed from this passage ; at present there are no traces of it. Accompanying the acute attacks of nasal catarrh, pains shoot down from the forehead into the eyes and teeth; soon they become general. At the same time there is an abundant yellow mucous discharge from the left nostril every three or four hours. Usually it occurs when the head is inclined to the right and downward. It only takes place during the progress of an acute attack of nasal catarrh, and shows itself in two to four hours from its inception. Before the mucous discharge is noticed, the patient has pain over the eyes and through the antra. The pain in the region of the left sinus is more accentuated than in that of the right. The pain is of a dull, heavy character, and never very intense. The eye teeth become very sensitive. The eyes themselves are unaffected. Ordinarily there is a very unpleasant taste in the mouth during the course of the acute attacks. The smell is dulled at these times, and sometimes noises in the ears are distressing, being most intense in the left ear. Vertigo is an occasional symptom. Each attack lasts three to four days, and recurs several times during the winter. Attacks of sneezing and snuffling usher in the acute attacks, and these symptoms are apparently caused by taking cold. A cold taken, always attacks the head and face sooner or later. When the acute nasal trouble has subsided, there still remains a fullness in the nose, with more or less snuffling, and a bad taste in the mouth. The breath does not become fetid. One granule of hydrarg. bichlor., gr. 1-60, three times daily after meals, and an ointment of carbolic acid and vaseline for the nose ordered. On February 11th, three days later, patient had improved somewhat. Iodoform and bismuth used through the nose by means of powder-blower, and repeated the previous prescriptions.

February 19th.—The left nasal passage cauterised with glacial acetic acid.

March 7th.—There was some difficulty in passing a soft metalic sound of medium diameter through the left nasal passage, because of submucous infiltration. Insufflation of iodoform through the nasal passages anteriorly, and application of a mixture of iododine and glycerine (one part to two parts) to the naso-pharynx. Unguent. iodoform. and caps. cubebæ prescribed. Patient complains of crackling sensations in his ears.

19th.—Schneiderian membrane more inflamed. Powdered magnesia iasufflated through the nose.

This patient also made a good recovery.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

May 2nd, 1887. Chas. S. Tomes, F.R.S., President, in the Chair.

The Minutes of the previous meeting having been read and confirmed,

Mr Fred Arthur Canton signed the Obligation Book. and was formally admitted to membership by the President,

The President announced that Mr. Harry Baldwin, L.D.S.Eng., 37, Cavendish Square, W., had been duly nominated as a candidate for membership.

The following candidates were then balloted for and elected members of the Society, viz. :—

Messrs. William Bromfield Paterson, F.R.C.S. and L.D.S.Eng., 46, Brook Street, Grosvenor Square, as a Resident Member ; and
Alfred Kendrick, D D.S.Eng., Bridge House, Taunton ; and
C. A. Hayman, L.D.S.Eng., Belle Vue, Clevedon, Bristol, as Non-resident Members.

The receipt of a volume of Smithsonian Reports and of the Year Book of learned Societies for 1887 was announced by the Librarian.

Dr. St. George Elliott showed in action a hot air engine made by Koerber, of Poland Street. Its advantages were that it was moderate in price, took up little room, was noiseless in action, and did not give off products of combustion. On the other hand it was not powerful enough for general laboratory work, and consumed rather more gas than an Otto gas engine—six feet an hour instead of four feet. But practitioners who only wanted a machine of small power for running the dental engine would find this one very convenient. Dr. Elliott added that he was sorry to say he had received a very small number of replies in answer to his call for papers, &c., for the International Medical Congress at Washington. He had been in correspondence with Drs. Taft and Bogue, and had made efforts to get a fair representation for this country on the executive of the Section, and he hoped with success. He trusted that some of those who could not attend the Congress in person would nevertheless send popers to be read at the meetings.

Dr. Walker showed some models sent by Mr. J. Humphreys, of Birmingham.

Two of these were from the mouth of a strong, healthy man aged twentry-three, and showed an extraordinary amount of erosion. Many of the teeth were worn down to the level of the gum. The dentine was very hard, and the pulps completely calcified. The patient had always enjoyed good health, and had never suffered any pain. Dr. Walker remarked that erosion to such an extent at so early an age wonld be very unusual, and he thought that it was probably rather a case of attrition than of true erosion.

Another was from the mouth of a child three years old, and showed six well-formed incisors in the upper jaw. The third (girl, aged thirteen) showed a supernumerary right upper lateral, and the fourth (girl, age fifteen) a supernumerary left upper lateral. The two last were sisters.

Mr. E Lloyd Williams showed an improved form of hot air syringe, designed by Mr. Rowney, of Derby, and expressed his belief that those members of the Society who had been converted to the consistent use of hot air in their every-day practice would find the instrument of great practical service. The current of air was produced by a small foot blower, and passed through a coil of brass tube heated by a small Bunsen flame. The warm air was conveyed to the back of the mouth by a bent nozzle, which, however, could be detached when the instrument was used for cavities in the front of the mouth. Two forms of the syringe were passed round, one having a Bunsen burner attached, whilst the other was adapted for placing on an ordinary bracket annealing burner or spirit lamp. A good working temperature could be obtained in a little less than a minute, and was maintained for three or four minutes ; it was readily controlled by regulating the flame. The Syringe was exhibited in working order at the close of the meeting.

Mr. Boyd Wallis showed a model of the upper jaw of a boy aged eleven, who had a most abnormally large central incisor.

The President then called upon Dr. Geo. Cunningham to read his paper on "The Physiological Action of Cocaine." (page 565.) At the conclusion of which Mr. Hern followed with one on "Cocaine and its use as a Local Anæsthetic on Dental Surgery."

Dental News.

REPORT OF DENTAL WORK DONE AT THE NORTH SURREY DISTRICT SCHOOLS, ANERLEY.

THE report for the year presents but few features of interest, but on the whole will compare favourably with other institutions of similar size, although in the aggregate, there is a slight decrease of cases upon the previous year which is partly accounted for by the absence of the severer forms of dental disease, embracing necrosis ; while at the same time there is an increase of scaling and regulation cases, of these, ten are under treatment with mechanical appliances. The mouths of all fresh inmates are examined at the earliest convenient moment after admission, and all urgent conditions corrected, so that, should the children but remain a short time, at least any dental disease causing or likely soon to cause, pain or grave consequences, shall be remedied. The use of nitrous oxide gas has been continued when deemed necessary. Gold has been used sparingly, and only where no other material would answer the purpose with any prospect of permanent success. Of Plastic material the bulk have been of amalgam, the slugs of which are calculated to save, permanently, the teeth in which they are inserted in a large proportion of cases. Osteo Plastic has been used to fill temporary teeth which required to be preserved for a limited time until they were shed, and in a few instances in permanent teeth which were too sensitive at the time for a metallic plug.

APPOINTMENTS.

W. R. F. Brooks, L.D.S., Ireland, to be Dental Surgeon to the Horson Infirmary, Banbury. Vice R. Heygase Brooks resigned.

Mr. Leonard Matheson, L.D.S. Eng., to be Dental Surgeon to the Hospital for Diseases of the Throat, Golden Square, W.

R. Denison Pedley, L.D.S., M.R.C.S., have been appointed Assistant Dental Surgeon to the National Dental Hospital, Great Portland St.

VACANCY.

National Dental Hospital, 149, Great Portland St. W. The post of Anæsthetist is vacant, applications on or before 24th June next.

National Dental Hospital 149, Great Portland Street, W. The post of Lecturer on Operative Dental Surgery, Applications on or before June 24th.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by corrsepondents.

To the Editor of the "British Journal of Dental Science."

Sir,

Could you or any of your numerous readers give me any information respecting a fluid for extracting teeth, named *Tiffine*, sold by Dr. F. E. M. Baldwin, of Ohio, and it can be procured from Mr. J. E. Bowe, his agent, 27, Upper Bedford Place, London.

Yours etc.,

Inquirer.

To the Editor of the "British Journal of Dental Science."

Sir,

Will you kindly inform me, through your enquiry column of the *B.J.D.S.*, why such persons who perform the work of a Dentist, and call their establishments free Dentoriums, etc., and who are not registered, cannot be put down. I am told it is because they don't use the title of Dentist. And one disadvantage they have, they cannot force their fees.

Yours faithfully,

J. G.

To the Editor of the "British Journal of Dental Science."

SIR,

In your last issue, "A. B." asks for my evidence for using "late Dental Surgeon to the Bradford Children's Hospital." Briefly, the facts are as follows. A little over four years ago I offered my services as dental surgeon to the hospital, to the *then* originators and proprietors, viz., "The All Saints' Sisterhood." They said that *at present* there was no need for a regularly appointed dentists, but if I would allow my offer to remain, should the hospital develop they would be glad of my services. The hospital developed, they, keeping to their promise, accepted my services by sending me patients. I have also performed dental operations for the working staff of the hospital. Nine months ago, not wishing to use a title which might be disputed, I obtained three legal opinions, which I enclose, and I feel convinced that I am not guilty of using a fictitious title, or a title to which I have not a right, when I sign myself,

Faithfully yours,

CHAS. F. FORSHAW,

"Late Dental Surgeon to the Bradford Children's Hospital."

We publish your letter, but the copies of your solicitors letters we have no spare room for, they only show that, as you acted for a short time as dentist to a private house, used by a sisterhood for housing a few sick poor, that you are justified in claiming the title of surgeon to a hospital which afterwards developed out of a private undertaking, and to which you yourself state you were never appointed. Whatever men of the law may think "under the circumstances," we are quite sure all medical and dental ethics are dead against your adopting any such title, and you will show a wise discretion in dropping its use for the future.—[ED. *B.J.D.S.*]

ANSWERS TO CORRESPONDENTS.

Mr. Partridge, London.—Your communication is of too personal a nature for us to publish, were we to open our correspondence columns to all who, having got into trouble, deem the pains and penalties of the law unjust, we should have no space for any other matter. Your contention appears to be that because other advertisers go scot free, so should you, that is, that two blacks make a white.

Communications have been received from—

Mr. Christopher Heath, London; Mr. H. Moxon, London; Mr. Jos. Gibbins, Derby; Mr. Partridge, London; Mr. Forshaw, Bradford,; "J. G." An Enquirer; Mr. H. N. F. Brooks; Mr. Henry Moore, Manchester; Secretary Odontological Society; Secretary Students Dental Society; Secretary Pharmaceutical Society; Mr. P. D. Pedley.

BOOKS AND JOURNALS RECEIVED :—

Dental Cosmos, Glasgow Medical Journal, British Medical Journal Pharmaceutical Journal, Chemist and Druggist, L'Art Dentaire, Independent Practitioner, Dental Review, (Chicago), Dental Summary, Dental Headlight, L'Odontologie, Correspondenzblatt des Zahnheilkunde, Dental Record, D'une Maladie Analogue, an Scorbut observée, chezcertains Reptiles, Par M. Magitot, Pharmaceutical Transactions, Transactions of the Odontological Society of Great Britain, Transactions of Students, Dental Society.

HOSPITAL REPORTS.

Statement of operations, &c., performed at the North Surrey District Schools, during the year, ending May 25th, 1887 :—

Extractions	Children under 14	374
	Adults	42
	Under Nitrous Oxide	32
Fillings	Gold	21
	Amalgam	93
	Osteo Plastic	28
Scaling		81
Irregularities treated by Mechanical Appliances		32
Miscellaneous		60
Total		763

HENRY J MOXON,
Dental Officer.

Statement of operations performed at the Victoria Dental Hospital of Manchester, during the month of May, 1887 :—

Number of Patients attended	787
Extractions	1549
,, under Nitrous Oxide	62
Gold Stoppings	24
Other Stoppings	81
Miscellaneous	272
Total	1988

Henry J. Moore,
House Surgeon.

Monthly Statement of operations performed at the Dental Hospital, Birmingham, from May 1, to 31, 1887.—

Number of Patients attended		1013
Extractions	Children under 14	
	Adults	
	Under Nitrous Oxide	35
Gold Stoppings		10
Other Stoppings		90
Advice and Scaling		97
Irregularities of the Teeth		3
Miscellaneous		73
Total		1321

TO CORRESPONDENTS.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., before the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer, which are no to be published when not desired.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.

3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and also beg to call particular attention to the importance of a carefully-penned signature and address.

4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, 289 & 291, Regent Street, London, W.

5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) . . 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 467. LONDON JULY 1, 1887 Vol. XXX.

LECTURES ON DISEASES OF THE JAWS.

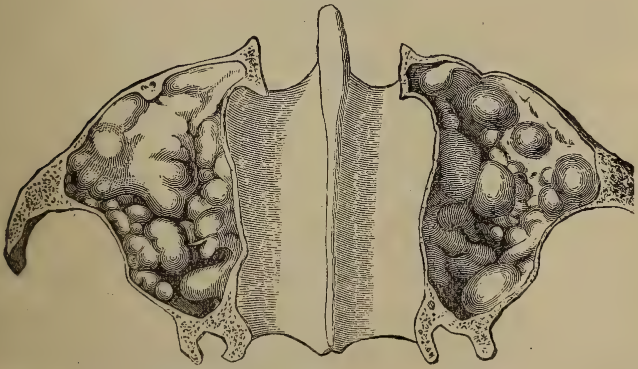
By Christopher Heath, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

(*Continued from page* 563.)

M. Giraldès would appear to have been the first author upon the subject of cysts of the antrum, and his thesis gained the Montyon Prize in 1853 ; but Mr. W. Adams may fairly claim priority of investigation, as shown by specimens preserved in St. Thomas's Museum—as indeed is acknowledged by M. Giraldès.

Mr. Adams's specimens, which I am enabled to produce before you, show each a cyst of oval outline, attached to the inner wall of the antrum, and measuring rather more than an inch and three-quarters of an inch respectively in their long diameters. These, of course, are too small to have produced any symptoms during life. The specimens given by M. Giraldes, in his *Recherches sur les Kystes Muqueux du Sinus Maxillaire*, from one of which the illustration (Fig 7) is taken, show very varying degrees of cystic growth in the mucous membrane of the antrum. In one instance there is a single cyst at the floor of the antrum, into which an opening has been made, whilst in the others the cysts a

Fig 7.



very numerous and of very variable sizes, depending, apparently, upon a cystic degeneration of the entire mucous membrane. M. Giraldes explains the formation of these cysts as being due to the dilatation of the glandular follicles of the mucous membrane, and urges that the ordinary operation of tapping the antrum would be useless in such cases, but that it would be necessary to open up the antrum so as to get at the seat of the disease. Fortunately these numerous cysts appear to be of slower growth than the single cysts, for it would be impossible to extirpate such numbers as are here seen (Fig. 7) without removing the entire jaw.

The contents of these cysts appear to be at first clear fluid, but of a viscid nature ; when more fully developed the fluid becomes flaky, from the presence of cholesterine, and occasionally assumes a greenish tint ; it may also become purulent, and Maisonneuve has recorded a case where pressure on the cheek produced a flow of butter-like fluid from the nose in a young woman who, for a year, had suffered from a tumour of the right upper jaw, which had been pronounced malignant, the face being enlarged and the nostril obstructed. Here puncture from the nostril, combined with pressure and injections, effected a cure, and the case must be considered as one cyst of the antrum, but whether a mucous cyst, the contents of which had undergone solidification, or a separate formation, must remain doubtful.

Treatment.—The treatment of cystic disease of the jaw is generally sufficiently simple. The bony wall being most commonly, to some extent, absorbed, it is only necessary to incise the distended membrane and evacuate the fluid. The finger then passes readily into the cyst, and can examine its interior, searching for any growth or tooth which may be lodged within. With curved scissors the opening can then be enlarged by cutting away the membranous wall sufficiently to allow a free passage for any discharge. The use of a simple stimulating lotion with a syringe is then all that is required to effect a cure, which, though slow, is permanent. I have treated a considerable number of cases of cyst of the jaw in this manner, and with uniformly good results.

Broca recommends to remove the membrane covering the inner wall of the cyst, and gives a case in which Nélaton discovered a plate of bony tissue derived from a malformed tooth on the inner aspect of a cyst, but this is in most cases a quite unnecessary complication of what is usually a very simple matter.

Polypus of the Antrum.—This is not a common affection, though by no means so very rare as stated by Paget. Luschka has investigated the subject, and found polypi five times in sixty subjects, some being two centimetres in length. He gives a drawing, showing a large number of these polypoid growths in an antrum, which he considers to be hypertrophies of the submucous connective tissue, covered with mucous membrane. Billroth also describes a good example of large polypus of the antrum with a long pedicle, and regards it as a very rare affection, and there is a good specimen in University College Museum (No. 658).

These polypi are closely allied apparently to the small cystic growths in the mucous membrane of the antrum described by Giraldès. Both affections consist essentially in hypertrophy of some elements of the mucous and submucous tissues. When the connective or areolar tissue predominates, the fleshly polypus is produced; when the glandular element is especially affected we have the cystic form produced. Intermediately, when the fibrous element is very loose and we have some glandular hypertrophy, the semi-gelatinous polypus is produced, which closely resembles the nasal polypus.

Polypi of the antrum are well supplied with blood-vessels, and bleed freely when interfered with. In some instances they appear to have a malignant character, or at least are the forerunners of malignant disease occurring in the antrum and jaw. Vidal de Cassis, who totally denies the existence of any true polypoid growths in the antrum, says that what have been mistaken for them most frequently are colloid tumours of the periosteum, but believes that many of the examples are cases of cystic growth. Syme, also, following the example of John Bell, maintains that polypi of the antrum always intrude from the nose, and are never developed in the antrum itself.

Sir James Paget has put on record (*Clinical Soc. Trans.*, xii) a case of polypus of the antrum in which a constant flow of clear watery fluid from the nose was the only symptom. At the *post-mortem* examination, "the floor of the antrum was covered with two broad-based convex polypoid growths, deep clear yellow, with the fluid infiltrated in their tender, tissue, and covered with exceedingly thin, smooth membrane traversed by branching blood-vessels. They were of rounded shape, about two-thirds of an inch in diameter and half an inch in depth; they looked like very thin-walled cysts, but were formed of very fine membranous or filamentous tissue, infiltrated with serum."

Cysts in connection with the teeth may be classed under two heads: first, cysts connected with the roots of fully developed teeth; and, secondly, cysts connected with imperfectly developed teeth to which the term "dentigerous cysts" has been applied in modern times. Both kinds may occur in either jaw, and in the case of the upper jaw, may be confounded with collections of fluid in the antrum, or may secondarily involve that cavity.

Cysts of small size in connection with the fangs of permanent teeth are frequently found on their extraction, but give rise to no symptoms demanding surgical interference, though they cause pain from pressure on the dental nerves. Occasionally, however, they grow to a large size, in which case they produce absorption of the containing alveolus, and give rise to a prominent swelling. They lie beneath the periosteum of the fang, and hence have been named by Magitôt periosteal cysts. The contained fluid is rich in cholesterine.

Three specimens of cysts connected with the fangs of teeth, for which I was indebted to Mr. Holborow King, are now in the Museum of the College of Surgeons (2161). Two of them (Figs. 9, 10) are quite small (one being remarkable for the length of its pedicle); the third (Fig. 8), is of the size of a hazel-nut, and was torn in extraction. The contents of the cyst were found, on microscopic examination, to consist of degenerating pus; their walls were formed of fibrous and granulation tissues, and they had no epithelial lining. This would confirm the view of Mr. Tomes that the morbid process is probably identical with that resulting in the formation of alveolar abscess, but, being less acute, a serious cyst is formed instead of a suppurating sac. In the Museum of the College of Surgeons is another specimen of a vascular thick-walled cyst, attached to one side of the fang of an incisor tooth (2161A).

Fig. 8.

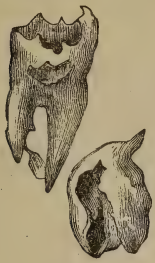


Fig. 9.

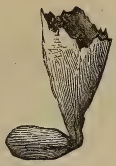
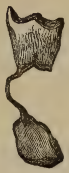


Fig. 10.



Large cysts, which produce more or less absorption of the outer wall of the maxilla, are, in my experience, very common consequences of the retention of diseased teeth, but seem to give surprisingly little inconvenience to the patients, even when of large size and producing considerable deformity of the face. They are commonly confounded with cystic degeneration of the antrum.

Treatment.—An incision into the cyst evacuates a dark-coloured, clear fluid, unless inflammation should have been excited, when the contents become purulent. It is advisable to cut away the thin outer wall of the cyst freely with scissors, or, if necessary, with bone-forceps, so that the cavity may granulate up. If an incision only is made, the edges are apt to fall together and re-unite with a reproduction of the fluid, unless an india-rubber drainage-tube is inserted, which can be attached by a thread to a neighbouring tooth.

Single Cysts in the lower jaw, as in the upper, may originate in connection with the fully developed teeth, and, as in the case of dentigerous cysts, may give rise to the suspicion of a more severe affection.

According to Broca, the great majority of cysts of the jaws have their origin in tooth-follicles. These are shut sacs, but they do not enclose a true cavity, for space between the wall and the outer surface of the dental papilla is occupied by the enamel-organ, an organised body, but very soft and gelatinous, apt to disappear under morbid influences, and thus leaving in the follicle a cavity ready to be transformed into a cyst. Dental cysts may originate in the follicles of the first or second dentition, or in the follicles of supernumerary teeth. Their contents are ordinarily clear fluid, sometimes bloody, occasionally filamentous or gelatinous, and still more rarely they contain a sebaceous matter like mastic, composed almost entirely of epithelium.

But periosteal cysts occur in the lower jaw without any apparent immediate connection with the teeth, though very possibly some irritation connected with these organs may have been the original cause of the mischief. The patient finds that he has a slowly-growing tumour of the jaw, which is painless, and gives him no trouble except from the deformity. The outer plate yields ordinarily to the pressure of the growing cyst, and thus a prominent smooth tumour is formed, over which the skin is freely moveable. When the bony wall is sufficiently attenuated, the peculiar crackling already described may be produced on pressure; and, if the disease is still unchecked, the bone becomes entirely absorbed, and nothing but a membranous cyst, with particles of osseous matter embedded in it, remains. Of this a remarkable specimen from a woman aged 45 is to be seen in St. George's Hospital Museum (II. 150). The cyst is for the most part single, and contains merely fluid, which may be clear or more or less coloured.

Cysts in connection with undeveloped teeth, or Dentigerous Cysts (coronary cysts of Magitôt), may occur in either jaw. These, as already mentioned, may suppurate and give rise to abscess, which may be confounded with suppuration within the antrum, or may project into the antrum, filling the cavity or communicating with it.

Dentigerous cysts arise in connection with teeth which from some cause have remained within the jaw, and have undergone a certain amount of irritation. They are almost invariably connected with permanent teeth, though Mr. Salter mentions a case in connection with a temporary molar occurring in the practice of Mr. Alexander Edwards, late of Edinburgh; and in a remarkable specimen belonging to Mr. Cartwright, which will be afterwards referred to, the tooth is a supernumerary one. I have also myself met with an example of cyst connected with a temporary tooth in a boy aged 4, brought to me by Mr. C. J. Fox. In this case the temporary right canine tooth was wanting, and there was a cyst developed in its situation, on cutting into which I extracted seven small irregular nodules of dentine and enamel, but no complete tooth, this being, therefore, an example of the odonto-plastic cyst of Magitôt.

Mr. Tomes explains the formation of cysts in connection with retained teeth by referring to the fact that, when the development of the enamel of a tooth is completed, its outer surface becomes perfectly detached from the investing soft tissue, and a small quantity of transparent fluid not uncommonly collects in the interval so formed. This fluid ordinarily is discharged when the tooth is cut; but when from some cause the eruption of the tooth is prevented, it increases in quantity, gradually distending the surrounding tissues in the form of a cyst.

For further microscopic details, and for a full discussion of Magitôt's views, I may refer to Mr. F. Eve's very able lecture on Cystic Tumours of the Jaws, delivered in this theatre, and published in the *British Medical Journal,* January 6th, 1883.

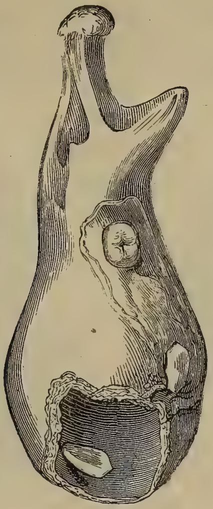
When dentigerous cysts occur in the lower jaw, they form more isolated and prominent tumours than in the case of the upper jaw, and in some cases the projecting bony wall has been removed. In St. Bartholomew's Museum is a specimen of the kind (I. 119), consisting of a portion of a bony cyst, which was removed by Mr. Earle from the external and lateral part of a lower jaw. The cyst is lined with a thick and soft membrane, which has been in part separated from it. The cavity of the cyst was filled with a glairy fluid, and at the bottom of it a canine tooth of the second set was adherent to the lining membrane. The case is referred to by Stanley, who gives an accurate drawing of the preparation. In the Museum of the College of Surgeons there is a very similar preparation (2196), showing a bony cyst of oval shape one inch in its long diameter, lined with a thick, well-formed membrane, containing an imperfectly-formed bicuspid tooth, which was removed by Mr. Wormald from the lower jaw of a female, aged 17, whose case will be found in the *Lancet,* June 22nd, 1850.

Cases of dentigerous cysts may be mistaken for solid tumours. Thus, Gensoul, of Lyons, has recorded the case of a girl aged 13, whose antrum was distended with a large collection of yellow fluid, and contained a canine tooth attached to its wall, in whom he had made the incisions necessary for the removal of the tumour before he discovered its nature. Mr. Syme also has related the case of a woman aged 31, on whom he operated for a tumour of the upper jaw, of four months' standing, by laying open the cheek and removing the tumour with the bone forceps. "The tumour was found to consist of a dense cyst, lined throughout with earthy matter in a crystalline form, and containing a clear, glairy fluid, together with the crown of a tooth, apparently the lateral incisor." In a cavity beyond the tumour was found a fully-formed canine tooth, encrusted with a thin plate of bone. The teeth are said to have belonged to the temporary set.

When the cyst occurs in the lower jaw, and is less prominent than in the two cases already mentioned, giving rise rather to a general expansion of the bone than a distinct tumour, the disease may be mistaken for a solid tumour of the lower jaw. A case of this kind occurred to that excellent surgeon, the late Mr. S. W. Fearn, of Derby, who had the courage and honesty to publish the case (*British Medical*

Journal, August 27th, 1864), and to whom I was indebted for the very valuable preparation (College of Surgeons Museum, 2195), from which the drawing (Fig. 11) was made.

Fig 11.



Mr. Fearn's patient was a girl aged 13, who had a large resistant tumour of the left side of the lower jaw, which had been growing six months. There was some enlargement also of the right side, and the teeth there were very irregular. The teeth on the left side had been extracted, with the exception of the second molar and a temporary molar. No opening could be detected in the tumour, though there was a constant offensive discharge from its surface. Mr. Fearn removed the left half of the jaw from the symphysis to the articulation, and on division of the bone with the saw, a quantity of fœtid pus escaped. The tumour proved to be a bony cyst, formed by the expansion of the two plates of the jaw, which extended for some distance to the right of the symphysis—a very unusual occurrence. The cavity is lined with a thick vascular membrane, and at the bottom the canine tooth will be seen projecting from the wall. The case was evidently, therefore, one of dentigerous cyst, due to the non-development of the canine tooth, the contents of which had, from some cause, become purulent. The mental foramen, with the nerve emerging, is still visible in the preparation The patient made a good recovery.

A very similar case is recorded by Dr. Forget, in his essay on *Les Anomalies Dentaires et leur Influence sur la Production des Maladies des Os Maxillaires*, 1859. Mr. Underwood has allowed me to have the accompanying drawing (Fig. 12).

Fig. 12.

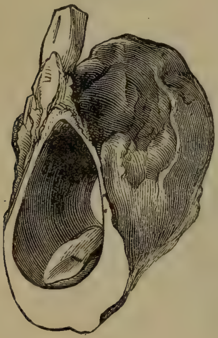
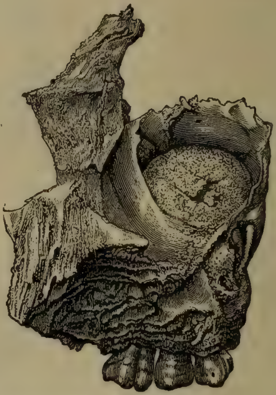


Fig. 13.



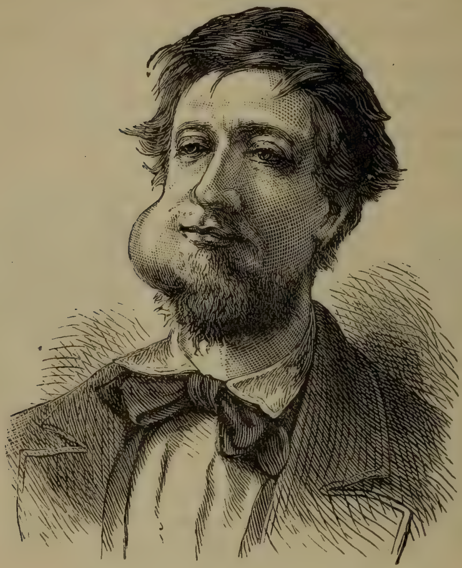
taken from the model of a preparation which he possesses showing very beautifully a cyst of the lower jaw, which was removed by M. Maisonneuve by sawing through the bone at two points. The canine tooth is seen lying horizontally at the bottom of the cyst. The patient, aged 56, had a swelling in the lower jaw near the chin, and an opening formed behind one of his front teeth, from which a saline fluid escaped. The man made a good recovery from the operation.

Dentigerous cysts, like other cysts, may undergo alteration, not only of the contents, but of the cyst-wall. The opportunities for recognising such changes are exceedingly rare, and the only known specimen of the kind is one in the possession of Mr. Samuel Cartwright, which shows calcification of the cyst-wall. The preparation (Fig. 13) is one of the right superior maxilla, which, having been opened, shows a bony cyst within the antrum and attached to its floor, but unconnected with it elsewhere. The cyst has been opened and contains a supernumerary tooth loose in its cavity, though no doubt originally attached to its base. This is clearly a case of dentigerous cyst which he has undergone calcification, and which, had it been expanded to a greater degree before this change took place, would in all probability have been inseparably united with the walls of the antrum.

The diagnosis of dentigerous cysts from other cysts is exceedingly difficult until they are opened, as, indeed, is the recognition of any form of cyst. A careful examination of the mouth may reveal the absence of a permanent tooth, or, as in one of Mr. Salter's cases, may show a temporary tooth occupying a permanent position, and this would direct the mind of the surgeon to the possible existence of a dentigerous cyst. On the other hand, however, it must be remembered that teeth may be wanting without being connected with any disease; thus I am acquainted with a family who have the hereditary peculiarity of a single bicuspid tooth on each side. When a cyst is sufficiently expanded for the wall to yield under the finger with the characteristic parchment-like crackle, there can be no difficulty in its recognition, but without this it is impossible in all cases to distinguish between a cyst and a slow-growing, solid tumour. Under these circumstances, it is well to insist upon the propriety of making an exploratory puncture in all cases which are not obviously solid growths, and have sprouted so that their nature can be certainly recognised. The puncture being made within the mouth will be of no moment should a more severe operation subsequently be necessary.

The accompanying engraving (Fig. 14) shows a cyst of the lower jaw occurring in a man aged 34, who was under my care in 1878. The swelling began nine years before, and was of the size of an ordinary orange, round, very hard, and fixed to the angle of the lower jaw on the right side. Its edges were well defined, there was no fluctuation nor pulsation, except that of the facial artery, which was stretched over the tumour. Externally the tumour appeared to be solid, but, examined from the mouth, the anterior part of the wall yielded slightly to firm pressure. On puncturing from the mouth through the bony wall, I entered a large empty cavity lined with soft tissue, which on microscopical examination showed portions of hyaline cartilage and cartilage with a faintly fibrous matrix, surrounded by and gradually passing into oval and spindle cells. The bony walls of the cyst were broken down and partially cut away, and this proceeding was repeated a fortnight later. The tumour gradually diminished as suppuration went on, several pieces of bone being removed, and, six weeks after the cyst had been opened, a tooth was felt fixed at the bottom of the cavity, and on being extracted proved to be a bicuspid with a perfect crown and two small fangs. After this the cavity closed, and the swelling entirely disappeared. The case is remarkable both for the age of the patient and also for the fact that the cyst was empty, the fluid which must have been present at one time having become absorbed. A careful search for a tooth was made at the time of the operation, but one could not be found, and its discovery at a later date was probably due to the destruction by suppuration of the lining membrane of the cyst, which had completely enveloped it.

Fig. 14.



In the Museum of the Royal College of Surgeons is a preparation (2194) of the right side of the body of the lower jaw, completely and uniformly dilated into a large spherical cyst. No tooth or rudiment of a tooth can be discovered in the cyst, but its inner surface is lined by a layer of small epithelial cells, and is thrown, in places, into thick projecting folds. Mr. Eve considers it probable that the cyst originated in the enamel-organ of an abortive wisdom or supernumerary tooth, and hence would consider it an example of the follicular cyst developed in the embryonic period (Magitôt).

Treatment.—The treatment of dentigerous cysts is the same as for ordinary cysts, namely, a free incision and the subsequent extraction of the contained tooth. For the cure of many of these cases simple puncture will not suffice, and it will be necessary to remove a portion of the front wall of the cyst, and to fill the cavity with lint so as to induce granulation and gradual obliteration. This may be accomplished in most instances without any incision of the integuments, and in a few more extensive cases by simply dividing the lip, and carrying the incision into the nostril.

During the last few years very considerable light has been thrown upon the clinical history and pathology of certain cystic tumours of the jaws, both by cases occurring in my own practice and by the careful microscopic investigation of these and others by Mr. Frederick Eve, who embodied his results in a lecture given at the College of Surgeons in 1882, and published in the *British Medical Journal* of January 6th, 1883. Mr. Eve believes that, so far from multilocular cysts having a dental origin, they are produced by an ingrowth of the epithelium of the gum. They have frequently followed some form of injury, irritation by decayed teeth, or long continued inflammation, which have induced an increased supply of blood to the parts. The multilocular cystic tumours are slow of growth, they have very little tendency to implicate surrounding parts or the neighbouring lymphatic glands, and and if completely removed rarely recur and still more rarely become disseminated through the system. Their comparative innocence is probably explained by the bony capsule forming their boundary, by their low degree of vascularity and by the remarkable tendency of the epithelial cells composing them to undergo degenerative changes.

ON THE PHYSIOLOGICAL ACTION OF COCAINE ON THE LOWER ANIMALS AND MAN, AND ITS USE IN DENTAL SURGERY.

By George Cunningham, B.A. (Cantab.); D.M.D. (Harvard), L.D.S. (England).

(*Continued from page* 572.)

Observations on Man.—Having prepared ourselves by this description of the principle toxic effects of cocaine on the lower animals, I shall now ask your earnest consideration for a series of cases showing the action on man, and the frequency of disagreeable, if not injurious, toxic symptoms. My record differs so materially from the experience of those dental practitioners who have so warmly advocated the use of cocaine by injection, and from the recorded results of M. Viau, that I must exclude the purity of the drug from cavil by saying that the preparation used was the now familiar 1 grain tubes of cocaine hydrochlorate, sold at the dental depots, and except in the first few cases the solution was freshly made each time with distilled water.

In each case a local application of a 20 per cent. solution was made to the gum to relieve the slight pain of inserting the point of the syringe.

From the very first I recorded the effects on the pulse, simply with a view of determining the changes in its character, and if possible to find an indication as to the best moment for operation.

In June last I was fortunate enough to interest a very nervous and apprehensive patient for whom I had several operations of a painful nature to perform. He is a well-known scientific chemist, and experienced and careful observer as his notes on his experiences show, and I cannot do better than give you these in his own words.

Case I.—*Extraction of Tooth.*—June 19th, 1886. Quantity of cocaine injected, 1½ grains. "Immediately after injection of the cocaine I felt very slightly faint and giddy; this soon passed off, and was succeeded by a slight numbness in the arms and hands, and a more marked numbness in the jaw. After a time, perhaps five to eight minutes, a difficulty in swallowing saliva was experienced ; this continued until after the extraction had been made ; a very feebly marked uneasiness in the region of the heart was felt. I had no inclination to drowsiness ; on the contrary I had a most lively interest in the procedure, and was perfectly, even vividly, conscious of everything around me. A decided tendency to talk about the operation manifested itself. I almost regarded myself as some one else, on whom an interesting experiment was being performed, and I felt pleased to be present at the operation. When it was proposed to take out two stumps on the other side of the jaw without cocaine injection, for a moment I hesitated, but my anxiety to compare the pains of the two operations very quickly induced me to regard this part of the experiment with considerable interest.

"About ten minutes after the injection the pulse was about 90 to 93 ; two and a half hours after the operation it was 90 ; four hours after the operation it was 75 ; my pulse is normally about 72 to 74.

"I had almost no abnormal sensation of any kind after the operation, perhaps a very slight sickness for a few moments, and a disinclination to eat (the operation was performed about 1.20, and I had had no food since 9 o'clock).

"The operation was not painless, but the pain was small and decidedly less than that felt when the two stumps on the other side of the jaw were extracted. The pain was very local, no shock or wrench to the whole system was felt."

"CASE II.—*Nerve destroyer.*—June 14th, 1886. Quantity of cocaine injected, about 1 grain. The injection was almost immediately followed by slight drowsiness ; after two or three minutes this gave place to vivid consciousness of all surroundings and a feeling of great interest in the operation. About eight minutes after the injection the pulse was 96. No after effects of any kind were experienced, no difficulty in swallowing saliva, little or no numbness in the jaw ; the slightly excited state wore off, and in the course of about an hour everything seemed to be normal ; unfortunately the pulse was not observed after the operation. The operation was almost absolutely painless.

"CASE III.—*Stopping Sensitive Teeth.*—Saturday, June 26th, 1886. Quantity of cocaine injected, about 1 grain. Symptoms exactly as described on Thursday, also sense of security, of conviction that no great pain would be felt, was marked. Eight minutes after injection pulse was 96 ; ten minutes after, 102; forty minutes after, still 102; sixty minutes after, about 100 (operation lasted about sixty minutes). One and a half hours after injection, pulse was 86; two hours after, still 86; three hours after, 73.

"No loss of appetite or feeling of sickness was felt to-day or on Thursday.

"CASE IV.—*Fixing Pivot Teeth.*—Saturday, July 10th, 1886. Injection was made after one tooth had been fixed, the operation having lasted about one hour. Pulse before the injection, 85.

"Immediately after the injection I felt a very slight, almost inappreciable faintness: no numbness in the jaw, or difficulty in swallowing saliva. The slight faintness quickly disappeared; eight minutes after the injection the pulse was 83 to 84; ten minutes after, 82 to 83. As I was experiencing none of the effects which had formerly followed after the injection of cocaine I began to think that enough had not been given, or that the liquid had not penetrated the tissues properly. Dr. Cunningham had left the room, so that I could not ask him anything about the quantity injected. Fifteen minutes after injection pulse was 82 to 83, all abnormal sensations were absolutely non-existent, but the pain caused by the injection-syringe was very perceptible. I now began to suspect that Dr. Cunningham had not injected any cocaine. When he returned, twenty minutes after the injection, and asked me how I felt, my suspicions were confirmed. No cocaine, only water, had been injected.

"I had not the slightest notion or suspicion at the time of the injection that cocaine was not being used."

"CASE V.—*Fixing Pivot Teeth.*—Saturday, July 10th, 1886. Quantity of cocaine injected, about 1 grain. Pulse before injection was 82 to 83. Immediately after the injection slight drowsiness and faintness were felt. The faintness increased and was more marked than on any former occasion. Eight minutes after injection pulse was 85; about ten minutes after injection faintness began to pass away, and was succeeded by the usual vivid consciousness, great interest in the operation, and feeling of security. Twelve minutes after injection the pulse was 107, the jaw felt slightly numbed and there was some difficulty in swallowing saliva. Forty minutes after the injection the pulse was 100, one and a half hours after, 92; two and a half hours after, 86; three hours after, 75. A swelling was produced in the upper lip: this had subsided about three hours after the operation all my sensations were normal; there was no loss of appetite, or indeed any appreciable after effects of any kind. Fixing the teeth was performed without any pain.

"*Conclusions.*—It seems to me after cocaine injection, two periods are to be noticed. The first extends, in my case with an injection of about 1½ grains, through an interval of some five to eight minutes; the pulse is only slightly quicker than usual, there is a feeling of slight drowsiness and faintness. The beginning of the second period is marked by the disappearance of drowsiness and faintness, and by a great increase in the rate of the pulse, then follows a feeling of vivid interest in the proceedings, great mental clearness, and a sense of security from pain. The second period lasts, in my case for something like an hour; after that I have returned to my normal state, except that the pulse is still quick; the pulse does not become normal until about three hours after the injection."

I trust you will absolve as readily as did the patient, the deception practised in Case No. 4. After the remarks of Mr. Smith Turner, in a discussion on cocaine in the Casual Communications exactly a year ago, I felt that some such experiment was necessary to prove that the results were not obtained merely "by working on the imagination."

Even in this apparently successful subject, the toxic phenomena were well marked, but not intense, and included faintness and giddiness, numbness in the extremities, difficulty in swallowing, uneasiness in the precordial region, marked loquacity, and a considerably accelerated pulse, with the after effects of nausea and a disinclination to eat on the first occasion.

The only other detailed cases which I shall trouble you are an extremely interesting series of observations on a patient, an active dental practitioner, familiar with the action of the drug, and who, after the first disagreeable, if not serious effects of the first administration, courageously volunteered to undergo a second administration with a view of ascertaining how much the susceptibility of the same individual may vary at different times, or how far the individual affected by serious symptoms may tolerate a further exhibition of the drug.

In the previous case (No. 14), where the symptoms had been much more serious, I was prevented employing it a second time by the express disapproval of two medical men who saw the patient, despite the desire of the latter to take it again. Our confrère, knowing all this, is all the more to be complimented on his determination and courage in offering himself for experiment.

Case 23.—T. F., March 14th, 1887.—After submucous administration of one grain of cocaine hydrochlorate on the outer side of the right ramus of the lower jaw, there soon appeared symptoms of a general nature, evidently due to the systemic absorption of the drug. The patient is a well-developed, muscular young man, with no constitutional or hereditary tendencies of a marked character, and to whom the drug was administered to relieve inflammation of the root of right lower bicuspid, with subsequent swelling of the corresponding cheek.

In the course of a minute or so, the facial expression changed from a quiet state to a fixed staring, with widely dilated pupils, as if some danger was impending. In five minutes the acute pain in the part had entirely disappeared, so much so that the patient was able to close his jaws vigorously, despite the inflamed periosteum. In eight minutes there occurred a feeling of weakness which I was unable to define precisely. It was complained of in the precordial region, and became so great that the patient cried out, "Oh my heart!" at the same time placing his right hand over the precordial region. He complained of great dryness of the mouth and difficulty in swallowing, which was seen to be due to an arrest of the salivary secretion. The loquacity increased till it soon reached its maximum, when the movements of articulation began to fail, and an indistinctness arose in his speech. During this very loquacious period it became quite evident that his articulatory movements could not keep pace with the production of ideas. This passed off rapidly, and was replaced by silence, with no desire to express his own ideas and views, if he had any. The staring, somewhat wild expression still persisted. On being asked questions he evidently did not care to be troubled, and answered in the shortest way possible. Marked intolerance of light now came on, which, however, had existed to a certain degree from the beginning. A dryness of the mouth and fauces was complained of, but he had arrived at a stage when he did not care either for himself or his surroundings, and preferred to be left alone in his drowsy state. He was now placed in the recumbent from the sitting posture. On first being placed on the sofa, he had an attack of restlessness which he was so unable to control that he rolled off. Then the respiration became more irregular and laboured for a time; while in seventeen minutes the patient complained of tingling sensations in his fingers. He had alternate loquacious and silent fits. In twenty-four minutes the tingling sensations ceased. After which he became more drowsy, and resented being asked any questions or troubled in any way, with very marked intolerance of light—in fact, so much so, that he expressed a desire to put down the gas, or have something over his eyes. In forty-five minutes he complained of a very uncomfortable sensation of depression and heaviness in the abdomen. He also felt that he would like to tell us a great deal about his experiences, but try as he would, he was unable to do so. After remaining in this state some little time he passed into another state, characterised by great personal confidence in being able to do this or that, and by his brightening up a little. His expression now was somewhat dull, stupid, and vague, and on getting up he did not seem to be well able to co-ordinate his muscular movements.

At this time he was shown various articles in the room, together with some coins, and although he recognised them, he was considerably puzzled to give the name, at first giving the wrong name, then it took him a long time to give the right one ; this soon passed off. At the end of this stage he could easily write his own name without difficulty. Now, almost three hours after injection, he only managed to walk home, half a mile, with help. He remained quiet the rest of the evening, and had no desire to take food, although he had not had anything since lunch, 1 p.m., that is, after a fast of seven and a half hours.

Case 24.—*T. F.*—10 and later 5 minims, 10 per cent. solution, cocaine hydrochlorate for extraction and replantation of left lower second molar.

P.M.	PULSE.	
5.50	72	Injection.
5.51	108	Paleness of face.
5.53	...	Constant swallowing. Deep inspiration. Pulse weaker.
5.54	120	Intestinal movements complained of.
5.55	120	Pupils slightly dilated—respiration normal—pulse weaker but regular. Loquacity first noticed.
5.58	...	Pupils moderately dilated—difficulty in articulation. Tremors well marked. Spontaneous movement of limbs, especially of left leg.
6.0	120	General restlessness. Conscious of oppression in respiration. (Patient wanted collar loosened which was already quite loose, therefore no necessity to undo it.) Difficulty in finding words to express, but none in articulation. Pupils more dilated.

6.3	128	Part of gum injected sensitive to touch. Deep inspiratory movements at intervals, with intervening quiet periods of respiration.
6.5	128	
6.6	...	Pulse still weak and rapid.
6.8	...	Feels very tired—deep inspirations going on.
6.10	104	Deep inspirations more pronounced—pulse weak.
6,12	...	Sensation complete in part injected.
6.18	100	Patient beginning to become quiet—somewhat drowsy, with fixed expression
6.20	100	Drowsy—entire loss of interest in his surroundings.
6.22	...	Pupils slightly smaller, Pulse not so rapid, and a little stronger.
6.25	84	No desire to answer questions.
6.30	...	Inspiratory movements not so pronounced—marked dryness of mouth.
6.32	72	Pulse as before injection—not quite so strong. Restlessness of extremities. Expression normal. Palidity disappeared. Patient felt quite right, only slightly fatigued. Patient says that during the last ten minutes he had a large number of ideas with a great desire to express them, but could not do so. Parts where injection was made hypersensitive.
6.45	88	Half grain of cocaine administered at the special request of the patient.
6.46	108	Characteristic respiration—pale. Same expression as before, only in a slighter degree.
6.46½	...	Tooth replanted.
7.0	72	Pain very marked on pressing replanted tooth.
7.5	...	Two cups of tea administered with distinct effect. Return of loquacity and great desire to impress upon us the inutility and inadvisability of using cocaine injections in dental practice.
7.30	...	Patient walked home entirely without help or assistance—quite a contrast to the previous occasions. Patient desirous of eating.
8.0	...	Dinner—but did not eat much. Replanted tooth did not hurt him much.
8.45	...	Patient rose from the table—became drowsy, then cross and disagreeable—lay staring in a limp condition on the sofa, oblivious and indifferent to his surroundings. Although an inveterate smoker, he could not be induced to try a smoke.
9.0	..	Patient smoked a cigarette with pleasure. The patient passed a somewhat sleepless night, and was greatly depressed all the next day.

These two cases have been fully reported, not because they happened to present the most serious phenomena coming under my observation, for you will see from a reference to the Tabulated Record of Cases that No. 14 was much more grave, but because the patient allowed us to treat him as the subject of a physiological experiment.

Tabulation.—The Tabulated Record of Cases I now present has some features which I think cannot fail to arrest your attention, especially that of those who are desirous that this Society should give a decision approving of the administration of cocaine by injection. A careful perusal of that table will be more eloquent than any words of mine, therefore my remarks on these observations shall be as brief as possible.

Condition of Patients.—The omission of a column for "temperament" may be remarked. The untrustworthiness of a diagnosis of this kind by a specialist such as a dental practitioner would render it of little or no value.

All the patients, with the exception of two, were strong, healthy young adults, or men in the prime of life. Of these two exceptions, the one, Case 12, is a confirmed invalid: the other, Cases 9—11, was not allowed by her medical attendant to take nitrous oxide, ether, or chloroform, on account of her bad state of health, yet, contrary to what might have been expected, the constitutional symptoms were in these cases the least noticeable or serious of all those observed.

The nervousness of the patient seems to be no indication that the effects of the drug will be either more marked or slighter than in ordinary cases. Case 14, in which the toxic effects were most marked, is that of an extremely nervous man, and may be contrasted with the stolid temperament of the subject of Cases 23 and 24, where the effects were, indeed, sufficiently serious. The subjects of Cases 9—11, and 1—5, were both extremely nervous individuals, and yet perhaps the most, indeed almost the only really successful results.

Examine the pulse column, note the men with pulses about or over eighty, they were all very nervous; the one great exception was the nervous vegetarian (Case 27), with a pulse of 74. Von Anrep concluded that the carnivora exhibit a greater susceptibility to the action of cocaine than the herbivora. Our human vegetarian, however, presented no lesser degree of susceptibility than the flesh-eaters.

Dose and Effect.—It is interesting to note the lack of any constant relation between the amount of the dose and the effect produced. The largest dose (1½ grains), in Cases 1 and 9, produced good results; the medium dose (1 grain), in Case 14, the very worst, and the minimum dose (½ grain), in Cases 6 and 18, one or more attacks of faintness, and in case 25 spontaneous muscular contractions. To see the varying effects of the same dose on the same individual at different times, compare Cases 23 and 24, also 2 or 3 and 5.

In Case 6, a second dose of half grain increased the pulse to 120 in twenty-four minutes, while the previous greatest acceleration was 112 in ten minutes; whereas in case 27, nearly the same dose added to the ½ grain dose within six minutes, neither increased nor diminished the rapidity of the pulse (120). Further notes on the effects of repeated doses on the pulse would be interesting.

From Cases 20, 25, and 26, it would seem that the addition of 2 per cent. of carbolic acid to the solution of cocaine does not, as claimed by M. Viau, materially alter the local or constitutional effects produced without that addition. It is worth noting, too, that in his own cases he ascribes any faintness or after trouble to emotion, and not to any action of the drug, while in those of Herr Telschow he lays all the blame on the drug.

(*To be continued.*)

HOW DENTAL ANATOMY SUPPORTS THE DARWINIAN THEORY.*

By W. A. Hooton.

In thinking about a subject for a paper, it occurred to me that it might not be uninteresting to consider briefly the Darwinian theory and some portions of the evidence afforded by Dental Anatomy.

It is unnecessary to refer to the importance and interest of this subject, involving as it does the origin of our race; indeed, I remember the remark of a certain professor, that the time was near when every educated person will be expected to be acquainted with the Darwinian theory.

The history of past life on the globe is of the greatest interest. The older naturalists believed that the different species of plants and animals were the result of separate acts of creative power, that they had no common origin, and that the characters of each species were fixed and unchanging.

But Mr. Darwin has shown that there are certain agencies at work modifying animal and vegetable forms, and that different species are related to each other by descent from common ancestral forms. The gist of the Darwinian theory then, is—That the descendants of some common ancestor undergo such variations as to become at last distinct species.

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* A paper read before the Dental Students Society,—London School of Dental Surgery.

As an example take a lizard and a sparrow, how dissimilar they appear; and yet a series of fossil forms have been discovered, showing the steps of the transition from the one class to the other—from reptiles to birds. A fossil creature, "Archeopteryx," occupies an intermediate position between reptiles and birds. Its appearance must have been remarkable. It had a bird's feet, and was clothed with true feathers. It had also a long tail composed of many vertebræ, with a fringe of feathers on each side. The two bones of the forearm were more or less like those of a bird, but the fingers were free and terminated by strong curved claws like a reptile.

What are the agencies which bring about such great results? The chief agency is Natural Selection (or survival of the fittest. By this it is meant that nature is at work selecting and preserving the fittest organisms and leaving the rest to perish. The truth of this will be seen from the following consideration:—

1st. More organisms perish than survive. For instance, the herring spawns annually 10,000 eggs, and the cod about 9,000,000 of eggs, and it has been calculated by Wallace that a bird which produces ten pairs of young during its lifetime, will, if we take its life at five years, increase to a hundred millions in about forty years, and there is no exception to the rule that every organic being naturally increases at so high a rate, that if not destroyed the earth would soon be covered by the progeny of a single pair.

What then are the causes which check the natural tendency of each species to increase? Insufficiency of food is one, and serving as prey to other animals in another cause, and eggs or very young animals seem generally to suffer most. Climate plays an important part, and periodical seasons of extreme cold or drought seem to be the most effective of all checks. Climate chiefly acts in reducing food, but may also act directly, and then the least vigorous individuals will suffer most, as when flocks of sheep are overwhelmed by snowstorms, and when the young grouse die on the moors after a wet and cold breeding season. These checks on the increase of each species cause a severe struggle for existence.

2nd. No two individuals are exactly alike. The differences in the offspring of the same parent are indeed often well marked; and since owing to the limited supply of food, or the climate, or serving as prey to other animals only a mall portion can possibly come to maturity, those organisms which have a slight variation useful in some way will have the best chance of surviving and will transmit their peculiarities to their offspring. Mr. Darwin gives the following illustrations of this. The giraffe, by its lofty stature and elongated neck is beautifully adapted for browsing on the higher branches of trees. It can thus obtain food beyond the reach of the other hoofed animals inhabiting the same country, and this must be a great advantage to it during dearths when the other animals often perish. And with these hoofed animals the individuals which were the highest browsers and were able during dearths to reach even an inch or two above the others will often have been preserved, for they will have roamed over the whole country in search of food.

We thus see how an apparently trifling variation in height which would not be of the slightest importance to most species might enable the favoured individuals to survive when others perished, and so in process of time an ordinary hoofed quadruped might be converted into a giraffe.

Again, suppose in the case of the wolf which preys on various animals, securing some by craft, some by strength, and some by fleetness, that the fleetest prey—deer for instance—had increased in numbers, or that other prey had decreased in numbers, when the wolf was hardest pressed for food. In such circumstances, the swiftest and slimmest wolves would have the best chance for surviving, and so be preserved or selected, and their offspring would also tend to be swift and slim.

We thus see that more organisms perish than survive, that a struggle for existence takes place, and that therefore those beings which have any variation useful to them will have the best chance of being preserved, and this is Natural Selection.

The principle of natural selection is illustrated by the dentition of snakes.

"Non-venomous snakes" have one row of teeth in the lower jaw and two rows in the upper jaw, sub-equal in size.

In the "Colubrine poisonous snakes" the front tooth of those standing on the maxillary bone is grooved for the conveyance of poisonous saliva into a wound, and at the same time the teeth behind it become rudimentary, while in the "Viperine poisonous snakes" they have all dissappeared leaving a large poison-fang alone.

How has this transition been brought about? In some snakes a few of the teeth are grooved on their front surfaces, presumably to convey saliva into wounds inflicted by them

This modification, being advantageous to the animal, would be transmitted to successive generations and intensified until the stage of the colubrine poisonous snake was reached. The persistence of the rudimentary teeth is accounted for by the law of inheritance. A fissure on the exterior of the tooth marks the line of junction of the lips of the groove.

But in the poison-fang of a Viperine snake the lips are in such close apposition that no trace of the join can be seen.

The animals belonging to the order of "Rodentia" are scattered almost all over the world, but there are two places without indigenous rodents—the island of Madagascar and Australia. And it is a curious fact that from the creatures which are there a form has arisen to take the place of the true Rodent ; in Madagascar the Cheiromys or Aye Aye, derived from the Lemurs ; and in Australia the Wombat derived from the Marsupials. How has this come to pass? Possibly owing to the scarcity of their customary food it became advantageous for these creatures to be able to gnaw through the bark of trees and shells of nuts ; and so in the slight variations which always arise those animals which developed any tendency, however slight, to a rodent type of dentition would have the best chance of surviving and transmitting their peculiarity.

Another and less important agency, modifying forms of animals, remains to be considered, viz., "Sexual Selection." This form of selection depends on the struggle of the males for the possession of other sex.

Mr. Darwin says ("Origin of Species") : "Male alligators have been described as fighting, bellowing, and whirling round like Indians in war-dance for the possession of the females ; male salmons have been observed fighting all day long ; male stag beetles sometimes bear wounds from the huge mandibles of other males ; the males of certain hymenopterous insects have been frequently seen by that inimitable observer, M. Fabre, fighting for a particular female, who sits by, an apparently unconcerned beholder of the struggle, and then retires with the conquerer.

"Any character which enables one male to get an advantage over other males, and so makes him more certain to propagate his kind, will be sure to be transmitted and intensified. In many cases victory depends on having special weapons confined to the male sex. A hornless stag, or spurless cock would have a poor chance of leaving numerous offspring."

"Among birds the contest is of a more peaceful character. The males vie with each other in singing and showing off their gorgeous plumage, and the females at last choose the most attractive partners. In this way it is probable that female birds by selecting, during thousands of generations, the most melodious or beautiful males, might produce a marked effect, which would be transmitted to their male offspring alone."

Dental Anatomy furnishes many admirable examples of the possession by males alone of sexual weapons.

In the old world monkeys, the males have canine teeth much larger than those of the females, they are cut late, when the animal attains sexual maturity, and are useful to their possessors as weapons in their combats with other males.

In the "Narwal" two teeth alone persist, and these are in the upper jaw. In the female they attain a length of 8 inches, but remain enclosed within the substance of the bone. In the male, one tusk (the left) continues to grow from a persistent pulp till 10 or 12 feet long. This tusk may fairly be assumed to be a sexual weapon.

In the male "Dugong" the upper jaw carries 2 tusks, which are also present in the female, but do not project beyond the gum.

The "Horse" furnishes most conclusive evidence of the truth of the Darwinian theory, and a very complete series of fossil forms have recently been discovered, showing the successive modifications which have taken place. The horse, as we know him, walks on the extremity of a single digit, composed of three phalanges, the terminal one bearing the hoof which corresponds to the nail of man. On each side of the digit is a small "splint bone," which is a rudiment of an ancestral digit. The horse's ancestor was "Hipparion," an animal about the size of an ass, and in it we find these two lateral digits developed, but small. Still earlier comes "Anchitherium," an animal of still smaller size, which walked on three digits, and had in addition, the rudiment of a fourth; while at beginning of the series stands "Orohippus," no larger than a fox, having four digits to its front feet, and three to those behind.

There are one or two points in the dentition of the horse which require notice in order to compare it with its ancestor, Anchitherium. The crowns of the incisors have a peculiar deep pit, which gives rise to the well-known 'mark' of the horse. Each upper molar exhibits on the worn crown the form of two crescents, one in front and one behind, with their concave surfaces turned outwards. From the inner side of the front crescent, a crescentic front ridge passes inwards and backwards, and its inner face enlarges into a strong longitudinal fold or pillar. From the front part of the hinder crescent a back ridge takes a like direction, and also has its pillar.

In "Anchitherium" there are 44 teeth of a simpler structure. The incisors have no strong pit. The canines seem to have been well developed. The crowns of the molars are short, and though the fundamental pattern of the horse-tooth is discernible, the front and back ridges are less curved, the accessory pillars are wanting, and the valleys much shallower are not filled up with cementum.

A word in conclusion about ourselves. We, too, carry about with us evidences of our humble origin, in the shape of rudimentary organs, which owe their persistence to the law of inheritance. The crumpled skin and cartilage forming the external ear, and the functionless auricular muscles connected with it prove our descent from some animal which had large and moveable ears.

Other rudiments are, the caruncle of the eye (a remnant of the nictitating membrane of birds and other animals,) and the skin-muscle (platysma myoides) which is largely developed in many animals, but useless in man. In discussing the descent of man it should always be remembered that there are far greater differences between the lowest monkeys and the highest monkeys than there are between the highest monkeys and man.

SOUTHERN DENTAL ASSOCIATION.—We publish in our "Dental News" columns a very kindly worded invitation from our transatlantic brethren to their meeting, we hope such courteous and graceful cordiality will meet with a hearty response. While on the subject of America we may mention that we are enabled with this present issue to complete our lists of routes, hotels *etc.*, for the convenience of those who made up their minds to go to the International Medical Congress of 1887, at Washington.

British Journal of Dental Science.

LONDON, JULY 1, 1887.

THE USE AND ABUSE OF PROFESSIONAL TITLES.

THERE appears to exist in the minds of many persons a complete misconception about titles and the use of letters as the abbreviations of such titles. It is, no doubt, a very useful thing to be able to label individuals as being of such and such a professional status, but it is altogether harmful when persons assume titles which, while appearing to the public to mean a great deal, do as a matter of fact, signify nothing at all. While many employ such titles because they either do not know better, or are careless about the matter, others wilfully and designedly adopt them to overawe and blackmail their patients or clients in general. The legal bearings of the question are simple enough, no one may employ titles recognised by the law as bestowing professional status unless he has obtained a right to them by a qualifying examination or other means admitting of due inscription upon a Register maintained under state control. All titles which do not admit of registration are, from a professional point of view, valueless and when used for the purpose of alluring the public are, actually mendacious. Our patriots we love to honour and so dub them "saviours of their country," "friends of the people," but what should we think of the man who caused such an epithet to be printed in large type after his name when he thought fit to inflict the overwritten world with a book or a pamphlet? There is not a very wide difference between such an one and the man who, having joined one of the very numerous societies learned, literary and otherwise, obtaining admission by a small annual payment after a perfunctory ballot, enriches his signature by tacking on a little bevy of capital letters, which, when all is said and done, simply means that he, Snooks, has been enrolled a member of the United Cobblers' Debating Society—Snooks, M.U.C.D.S. It is *dulce et decorus* a right and proper thing to affiliate oneself with science, literature or art, but such association is for the benefit of the individual and should in no way be blazoned abroad as if it invested with any professional merit. Membership or fellowship of societies such as the "Royal," the "Linnæan," the "Physiological" or our own the "Odontological" does possess certain specific merits since in the case of the first three only men are elected who possess known and recognised scientific attainments and have done original work, and in the case af the Odontological because careful investigation is made into the life and professional couduct of those proposed and unprofessional practices, such as advertising entails black-balling.

But in no case would any of these societies permit its fellows or members to use its name as a means of puffing, even were they disposed to resort to so very ungentlemanly a practice. It is charitable to suppose that other bodies are not aware how their names are dragged through the mire of handbills and posters, as a kind of guarantee—save the mark!—that the enterprising person so predging the society's credit, is someone of unusual pretention to knowledge and the respect of men. With, perhaps, the exception of titles conferred upon illustrious workers in the various branches of science, art or literature, men of culture and social standing refrain from parading initials implying membership of learned societies, so that the practice of flounting all manner of outlandish abbreviations of titles after the name, cannot be too strongly condemned as savouring not only of rank snobbery, but of downright attempt at deception. Let us explain; Persons outside the professions know very little of the meaning of the alphabetic tails which adorn the names of doctors, surgeons, and dentists. An L.D.S., R.C.S., Eng. seems necessarily a far bigger person than a simple L.D.S., he being enriched with three additional letters; in the same way the happy holder of the M.R.C.S., L.M. sniffs the air as he passes the plain M.R.C.S., although the latter has really accredited himself at the better examination. The hideous jumble we are at present in, with so many licensing bodies does little credit to the acumen of a xixth century legislature, but to have this confusion worse confounded by men who for lack of registrable title write themselves down member of this, "associate "of that, or "fellow" of the other, is really too bad. For the honest and straightforward members of our profession to deprecate the practice is not enough, they must first employ all possible moral suasion to induce the vain glorious and giddy to desist from employing meritricious titles, but then they must take every opportunity of instructing the public in the true value of such trumped-up designations and make clear in their minds the distinction between a well-worked and hardly-earned diploma or degree, and the tawdry fringe of letters having no professional *locus standi*, or intrinsic value. It is useless to leave these matters to the " good taste " of the individual, some men have no good taste, so that checks drawn upon that account will come back dishonoured, only one way remains in which to deal with them, to expose their tacties and hold them up to a well-merited opprobrium. No amount of letters after a man's name will make him a good dentist, if he be L.D.S. he ought to be one, and he should himself be capable of passing the required legal test, beyond that you cannot go, and as a matter of fact a man's success depends a great deal more upon himself than upon the number of letters appended to his name.

THE PROPOSED ENLARGEMENT OF THE LONDON DENTAL HOSPITAL.—The increasing demands made upon the staff and students of the London Dental Hospital, Leicester Square, have for some time caused much inconvenience from want of space and general accommodation for the proper carrying on of the work of the hospital and the dental school. The peculiarity of the situation of the hospital rendered enlargement a difficult matter, but it has, fortunately, turned out that the managing committee have had the opportunity of acquiring premises on the west side of the hospital for which they have paid three thousand five hundred pounds. The medical committee have generously come forward, and as ever ready givers, have offered the sum of one thousand pounds towards defraying this outlay, while Messrs. Claudius Ash & Son, have munificially contributed five hundred pounds for the like purpose. The enlargement of the Hospital, and the increased facilities of teaching in the school are matters which concern the whole profession, involving, as they do, the future efficiency of the teaching of dentistry in London, and so, must enlist the interest, and bid for the material support of not only those who, as old students, owe their success in life to their *Alma Mater*, but to the profession at large, or at least, to that section of it which has the progress of the dental education and the status of English Dentistry at heart.

APPOINTMENT OF A DENTIST TO THE COMMISSION OF THE PEACE.—We are informed that the Lord Chancellor has appointed Mr. George Bullock Bunter to the commission of the peace for the Borough of Maidstone, in which place Mr. Bunter has practised for thirty years and has earned the good-will and esteem of his fellow townsmen.

APPOINTMENT OF ASSISTANT SURGEON TO THE LONDON DENTAL HOSPITAL.—Mr. E. Lloyd Williams, M.R.C.S., L.R.C.P. and L.D.S., Eng. has been selected to fill the vacancy created by Mr. Arthur Underwood's resignation, and Mr. Claude Rogers' promotion to full surgeoncy. Mr. Lloyd Williams was a distinguished student of the London School of Dental Surgery taking several prizes and attaining to the rank of Saunders, scholar. During the past years Mr. Lloyd Williams in spite of the many claims upon his energies and attention involved in private practice, has found time to contribute some useful communications to the Odontological Society, the Dental Journals and the British Dental Association. Mr. Lloyd Williams is also the author of the article on Dental Surgery in the Medical Annual for the current year.

THE MANCHESTER SCHOOL OF DENTAL SURGERY.—We are very pleased to see that the first batch of Manchester dental students have passed through the ordeal of the college of surgeons with flying colours, and have received the L.D.S. This is no small feather in the cap of a young school and reflects no slight credit upon the teachers under whose auspices the students have been prepared.

"THE L.D.S. ONLY."—It is peculiarly objectionable for persons to hold up their professional brethren to ridicule because they possess this or are deficient in that degree or diploma. We have heard a great deal lately about the advantages the L.D.S.'s possess over the M.R.C.S.'s and have been even asked to believe an L.D.S. knows more about fractures of the maxillæ than the much despised M.R.C.S. It is said, a worm will turn when trodden upon, and the M.R.C.S. has turned and has whispered what an L.D.S. newly fledged and, of course, fully versed in professional lore, has done not a hundred miles from where we are writing. A patient given into his care by the confiding Principal has his tooth drilled, prepared with arsensic and filled. Returning anon this patient is found to have a face swollen to abnormal dimensions and to be suffering hideous agony. That tooth being pulled, reveals what? Well, only that our L.D.S had drilled right through the tooth and had forced his arsenic into the alveolus *hinc illæ lacrimæ*!

WHAT DOES THIS SHOW? Simply this, that because a man is an L.D.S. only, he does not necessarily devote all his attention to perfecting his diagnotic and manipulative skill, he should know his dental work theoretically and practically, but he may not. The M.R.C.S., L.D.S. may be a good surgeon and a bad dentist or, possibly, he may be an excellent dentist and yet know how to set a jaw or treat a broken leg. There is a good old saying about stone throwing and glass houses, we commend it to those who seek to glorify themselves by depreciating their fellows.

STAINED TEETH AND HOW TO BLEACH THEM.—Peroxide of hydrogen made into a solution of the strength of five per cent, mixed with powdered pumice and well rubbed over the teeth removes most stains. The teeth should be well cleansed with tepid water after, but the application given above is harmless.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—This august body are petitioning to be allowed to hold "lands," etc. of value not exceeding £20,000, instead of £2,000 as now. 2. To enable the Council to determine by rules and regulations, instead of, as at present, by bye-laws, the conditionsof admission to the Fellowship by examination; and to determine by bye-laws, instead of by Charter, the fees payable for such Fellowship. 3. To empower the Council to elect to the Fellowship Members of twenty years' standing, not exceeding ten (instead of two) in each year, on the payment of the same fee as required for the Fellowship by examination. 4. To authorise the election by the Council of any number of persons, not exceeding two in each year, whether a member or members of the college or not, having, in the opinion of the Council, to be ascertained and expressed in such manner as the Council may from timn to time think fit and direct, render distinguished service to the advancement of surgery or the science allied thereto, such persons to be and be called Honorary Fellows. Such Honorary Fellows not to pay any fee, and to be ineligible to vote for the election of members of the Council. 5. To provide that Fellows may vote in the election of the Council either in person or by voting papers, such paper to be signed, authenticated, and delivered in such manner as the Council shall from time to time think fit and direct. No election of members of Council to be valid unless there shall be present at the meeting for the purpose of such election, such number of Fellows as the Council may from time to time think fit and direct. 6 To render Fellows of ten (instead of fourteen) years' standing, eligible for election as members of Council, and to abolish the restriction in regard to their practising as apothecaries. 7. To simplify the mode of nomination of Fellows, candidates for election to the Council, by requiring in each case only one nomination paper to be signed by three Fellows. 8. To dissolve the Midwifery board. 9. To enable the Council to increase the number of members of the Board of Examiners in dental surgery, and to require that those members of the Board described as "persons skilled in dental surgery," who shall in future be elected, shall be persons registered under the Dentists Act of 1878.

Abstracts of British & Foreign Journals.

WESTERN DENTAL JOURNAL.

RETROSGRESSIVE METAMORPHOSIS OF DENTINE.

By W. H. Atkinson, M,D., D.D.S., New York.

It has two special modes of display: The 1st. the normal form, causes removal of the temporary or milk teeth to make way for the permanent set. The 2nd is rare, it consists in a rather obscure removal of dentine within the pulp chamber which enlarges. This occurs concurrently with slow decay, and appears unexpectedly to even careful and painstaking dentists in preparing cavities for filling. Sometimes there is only mucoid substance at the place of entrance to the chamber, at others there is regular embryonal tissue, (like unto the "carneous body," always present in normal absorption of the roots, and crowns of children's teeth), immediately impinged upon by the instrument at the periphery of the enlarged pulp chamber. Sometimes an empty chamber indicates complete atrophy of the pulp, in the quiet removal of the entire contents without formation of the gaseous products of retrogressive tissual and orpcuscular metamorphosis. This particular form may fellow in nearly complete calcification of the body of the pulp, by a seeming lack of lime salts necessary to complete the calcification of the pulp in the roots. At other times the patient suffers from obscure distress, usually called "neuralgia," which results from that form of calcification of the pulp, known as "pulp stones;" or from regularly forming secondary dentine, reducing the chamber and impinging upon nerve filaments, thus causing the suffering.

In other cases a puff of odourless gas escapes upon opening the chamber. This occurs where the pulp is debilitated. Some of these cases are marked by a greater or less change of colour of the tooth, from a merely perceptible shade of bluish gray to deep brown and even black, which proves the loss of vitality of the pulp. Whenever the end of the root or roots is encysted the teeth are useful although they look ugly. Very rarely a black tooth becomes the seat of alveolar abscess which is then amenable to treatment for this condition, upon the principles appropriate to that form of disease.

As dentine is a product of metamorphosis of the pulp to its first formation it may return to the embryonic condition of the elements of the structure. This occurs when there is a demand for removal of the roots of the temporary teeth; this is easy of conception in the regular alternation of growth, maturity and decadence of these short lived organs; but that it should occur in the more dense, and larger adult set, is difficult to comprehend.

DENTAL COSMOS.

ENAMEL AND DENTINE—SOME THOUGHTS ON THE NEW THEORY CONCERNING THEIR STRUCTURE.

By George S. Allen, D.D.S., New Year.Y.

Commenting upon the statements of Abbott's, Bödecker and Heitzmann asserting the vitality of enamel and dentine he says it is extraordinary that other authors have failed to corroborate their discoveries for the technical methods, as described, are not strange or peculiar, or difficult to carry out.

No new reagents have been employed. Some new combinations there are, but the old familiar methods are still there. Negative results only have rewarded the efforts of those who have followed the directions and paths marked out by Drs. Abbott, Bodecker, and Heitzmann.

The principle reagent used—gold chloride—is not especially valuable for demonstrating the presence of protoplasm in tissues. It has a marked affinity for nerve-tissue, and is most useful for demonstrating the finer fibres and terminations of the nerves; but its action is in a measure uncertain and variable. Osmic acid does stain protoplasm, but it stains fatty tissue more decidedly and for fixing some delicate tissues has great value. Still, neither of these reagents can be said to differentiate protoplasm in a special or marked manner. Probably their evidence alone could be accepted as final on a disputed point like the one under consideration.

From another stand-point it is urged. A protoplasmic reticulum, as described, must be a reticulum of a soft, semi-fluid character, and one easily destroyed and dissipated by post-mortem changes. It could not exist in the dried desiccated tooth and in fact the technique described by Drs. Bodecker and Abbott lays special stress on the importance of keeping the sections, through all the changes in preparation, wet. A freshly extracted tooth must be taken, and it must be cut, ground, and passed through the whole process in the "green" condition. If the existence of the reticulum in the enamel and basis-substance of the dentine of the living tooth, what would the microscope show in an examination of a dry dessicated section in balsam such as we are all acquainted with? If we are able to follow the bed of the dentinal fibres in all their finest ramifications and anastomoses by the presence of air in the tubules in such a mount, why should we not be able to make out the form, size, and arrangement of the so-called reticulum in the same way? The protoplasmic reticulum in character must be very much like the dentinal fibre, and like the fibre must be enclosed in solid walls. Otherwise it could not exist—at least not as a *living* reticulum. Is it not plain, then, first, that in the desiccated tooth both reticulum and fibre will disappear, and second, that in a prepared section of such a tooth, mounted in balsam, the size, arrangement, and character of both fibre and reticulum—being similar in character and having like environments—could be demonstrated in the same way and by like optical means? It is well-known that the dried sections, balsam-mounted, show no evidence whatever of a reticulum, though they plainly and in the most marked manner demonstrate the existence of the fibres in their minutest details.

Testing the theory from a chemical standpoint so large a proportion of animal substance, as evinced by the drawings and descriptions given in illustration of the reticulum, would necessarily indicate a much larger percentage of animal matter than that given in the books for enamel. An average of not over five per cent. animal matter would strongly contraindicate its presence, and as not over half that amount of organic matter is oftentimes found, the difficulty in the way of explaining its existence is greatly increased. It must, indeed, be a very lower grade of living tissue. And how is it nourished ?

Dr. Allen appears to find a disparity between the drawing and the actual microscope specimens.

Referring to his own careful examination of Dr. Abbott's specimens he says several hours time was consumed in the examination. Each observer made his own observations independently of the other, and no comparison of views was made until each had fully satisfied himself and fully made up his mind. *The writer could not make out any reticulum, nor in fact anything resembling one. The specimens were worthless for the purpose intended.*

The writer is not prepared to say there is no living matter in the substance of the enamel, or in the inter-fibrous substance of the dentine. But he does deny the existence of the protoplasmic reticulum as described and figured by Drs. Abbott, Bodecker, and Heitzman.

IMMEDIATE ROOT-FILLING.

By C. Edmund Kells, Jr., New Orleans, La.

To-day a root is treated as a simple cavity—cleaned, and filled at once, no matter what its condition. There are two exceptions to this rule,—one when so much swelling of the face exists as to render operating impossible; and again when there is so much bleeding through the foramen (in this case, of course, the pulp was alive, in part at least) that too much time is required to stop it. In each of these cases a second sitting is needed to complete the filling of the fang; but fortunately these conditions are not often met with.

If the abscess is caused by the dead pulp, and we remove that, from what source are we to look for further trouble ? None.

If any debris is forced through the foramen, irritation will follow, but may usually be readily controlled. If all the pulp is not removed, failure may result from the imperfect operation, not from the imperfect method employed. The writer believes that any root may be cleaned as well in one sitting as in a dozen. It is not possible to fill all.

The writer does not like or use barbed brooches, or drills. If the canal is to fine and fill no trouble will follow.

He uses, carbonised orange wood and Gullois' cement, but lays no stress on the material used for filling. For cleansing he used carbolic acid only.

Literary Notices and Selections.

MALLETS AND MALLETING.

By G. S. Salomon, D.D.S., Chicago, Ill.

The use of the mallet in dentistry exceeds, no doubt the use of any one instrument which we require for daily use-and strange to say, very little is said about this device in, society meetings, text books, or journals; and for this reason I have chosen the above for my subject. There is no doubt that hand-pressure was not considered the very best mode, nor the most practical way, of impacting gold into decayed teeth. The mallet would date back as far as the introduction of gold as a filling material, had the pioneers of our profession understood the real qualities of gold. It is a fact (though it seems incredible) that it was known for years that gold was weldable at ordinary temperature, fully as well as iron, which can be welded only at a red heat, whilst of late years it has also been ascertained that platinum can be welded at a white heat. It is certain, however, that as soon as the welding property was discovered, the mallet sprang into use spontaneously as it were. Where the mallet came from is difficult to ascertain. The time of its introduction antedates that of any of our practitioners of the present time. Koecker, in "Principles of Dental Surgery," London, published in 1826, writes thus: *"But what is more surprising and repugnant after the tooth is thus prepared for the reception of the stopping, some operators actually employ a *hammer* and *punch* to drive the metal into the cavity of the tooth. I have seen the most alarming consequences proceed from this barbarous practice, particularly in the cases of several ladies who consulted me in Philadelphia. Many of their teeth, especially the incisors, or front teeth and cuspidati, had been plugged in this manner." That the mallet was therefore employed prior to 1822, is proven by the fact that Koecker left this country in that year. Who the operators were he does not mention, but it seems certain that the mallet was used secretly by different men in the profession, who, perhaps, were scrupulous about mentioning the mallet to their brethren, for fear of being looked upon as charlatans. In what manner the mallet, or even what kind of a mallet it was, that was thus employed, I am unable to state, but whether or no it was used advantageously is doubtful, for Koecker further writes; "Some of them (the teeth) had already lost their vitality and were discoloured when I saw them, and others were so tender from the violence that had been used, that the least pressure upon them caused exquisite pain." Fitch,* in 1829, in "A System of Dental Surgery," published in New York, mentions a case of *splitting* an incisor tooth by the mallet, and concludes by saying that he is "persuaded that no judicious surgeon-dentist will ever adopt this very objectionable mode of performing the operation."

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* History of Dental and Oral Science, p. 123.

The introduction of the mallet has of late years been attributed to Dr. Atkinson, as having been introduced by him, but he declines the honour, and refers to Dr. Merrit, of Pittsburg, who showed him a mallet as early as 1838.

(*To be continued.*)

Dental News.

MEDICAL CONGRESS.

We have given full details as the means of transport and living in Washington in our June 1st issue, page 546, and we herewith furnish a list of Hotels in New York with their charges, as no doubt intending visitors will stay in that town.

1. Grand Union Hotel, opposite the Grand Central Depot, 4th Avenue 41st and 42nd Street, Manager, W. D. Garrison. It offers particular inducement to travellers visit-

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* Ibid, p. 124.

ing the city for business or pleasure. Terms, 1 dol. per day and upwards. No extras. Accommodation for 600 guests. Conducted on the European plan and visitors can regulate their expenditures to suit their inclinations or means.

2. Grand Hotel, Broadway and 31st Streets. Proprietors Henry Milford Smith & Sons. Conducted on the European plan and is one of the best and most central Hotels in the City. Terms moderate.

3. Victoria Hotel of 5th Avenue and Broadway 26th and 27th Streets. Specially adapted to strangers and families visiting the City. Proprietors H. L. Hoyt & Co. Terms for one room from 1 dol. to 2 dols. per day.

4. Rossmore Hotel, Broadway 41st and 42nd Streets. Proprietors, Temple & Putney. American and European plans. Rooms with board 3 dols. to 3·50 dols. per day. Room without board 1 dol. and upwards.

5. Glenham Hotel, Fifith Avenue near Madison Square. Location unsurpassed. Every modern improvement for the convenience and comfort of patrons. Terms for one room 2 dol. and upwards.

6. Ashland Hotel, 4th Avenue corner of 24th Street. Proprietor, H. H. Brockway. American and European plan. Terms, 2, 2·50 dols. and 3 dols. per day.

7. Cosmopolitan Hotel corner of Chambers Street and West Broadway. First class accomodation for 400 guests. Proprietors, N. & S. J. Huggins. Terms 50 cents and 1 dol. per day and upwards according to size and location of rooms.

8. Hotel Normandie corner of Broadway and 38th Street. Proprietor, F. P. Earle. Terms 2 dols. and upwards.

9. Fifth Avenue Hotel, Broadway. Proprietor, Hitchcock, Darling & Co. Rates 4,50 dols. per day. Accommodation for 500 guests.

Any further information with views of the different Hotels, their charges, etc., can be obtained free of charge, by applying to the publishers of this Journal.

INVITATION TO THE MEETING OF THE SOUTHERN DENTAL ASSOCIATION.

A CORDIAL invitation is extended to all dentists who will attend the International Medical Congress, to attend the meeting of the Southern Dental Association which will be held at Old Point Comfort (Fortress Monroe) Virginia, August 3rd.

The time of the meeting is the week before the Congress, and the place of meeting only a few miles south of Washington, and but a few hours by rail from New York.

A grand Southern welcome will be given all. A most enjoyable and profitable time is promised. After adjournment of the meeting, visitors and members will proceed to Washington, Saturday, Sept. 3, by steamer.

W. W. H. Thackston,

President *Southern Dental Association.*

B. H. Catching,

1st Vice President, Editor *Southern Dental Journal.*

THE CASE OF MR. PARTRIDGE AND THE GENERAL MEDICAL COUNCIL.

In the Court of Queen's Bench, before Mr. Justice Mathew and Mr. Justice A. L. Smith, the case of Reg. V., the General Council of Medical Education, ex parte, Partridge was tried.

An application was made for a *mandamus* directing the General Registrar of the Council of Medical Education to restore to the Dentist's Register the name of Henry Francis Partridge, pursuant to the Dentist Act, 1878, section 14. Partridge had been in practice in London as a dentist since 1867. In 1878 the Dentist Act was passed, whereby it was intended to create a register of those qualified to practise as dentists. In the same year Partridge obtained a diploma as licentiate in dental surgery from the Royal College of Surgeons, Dublin, and his name and qualifications were entered on the register. Section 6 (*c*) of the Act provides that persons engaged in the practice of dentistry at the passing of the Act shall be entitled to registration, and by section 7 a person so applying shall sign a declaration according to the form in the schedule to the Act. Partridge signed no declaration necessary to have his name registered as practising before the passing of the Act. In July, 1885, his diploma was cancelled, on the ground that he had advertised in connection with his profession, which was contrary to the declaration he signed when he obtained his diploma, which declaration said :—'I shall not attract business by advertising or any other unbecoming practice, and I agree that such diploma shall be cancelled on it being proved that I have done so.' Notice was sent from the secretary of the College of Surgeons, Ireland, to the registrar of the Medical Council, stating that Partridge's diploma had been cancelled ; thereupon the Council, after duly considering the matter, erased his name from the register.

"Mr. Kennedy, Q.C. (Mr. Mackenzie with him, for the Medical Council, contended that they were only bound to register his name so long as he was a licentiate. If he was bound to be on the register they would have a name with an erased qualification. He only asked to be registered in respect of his diploma from the Royal College of Surgeons in Ireland ; he never producod a declaration that he was practising dentistry at the time of the passing of the Act. The Act gives the registrar power to act without requiring the intervention of the constituent body.

"Mr. Justice Mathew : Would the medical man have a right to appeal to the Council, supposed the constituent body wrongly cancelled his diploma? No : if they wrongly cancelled his licence,, his remedy is to proceed against them. Section 13 gives the Council power to erase the name under certain circumstances where his conduct has been disgraceful in a professional respect, in cases where the constituent body have not acted.

"Mr. Justice Smith : Where does it say that the name must be erased upon the loss of diploma ? It is a necessary corollary of section 7.

"Mr. Justice Matthews : Suppose he came from Ireland to England and the Irish body cancelled his diploma, is his name to be erased ? We have only to look to his qualification.

"Mr. Justice Mathew : When he is put on, he is properly done so. The object is to provide a register of persons who are qualified. It is only in cases of very gross misconduct that the Act thought fit to give the Council the right to strike off the register. The Council say that as they respect the granting of the diploma, so they have to recognise the power to take it away.

"Mr. Finlay, Q.C. (Mr. Lyon with him) argued in support of the rule. By the Medical Act, 1858, section 28, the Council had power to erase. This section must have been under consideration of the framers of the Act of 1878, and been advisably omitted from the Act of 1878. Suppose a dentist adopted a particular theory obnoxious to his own college, it follows from the omission of section 28 of the Act of 1858 from the Act of 1878 that the argument of the Council is untenable. The right to be on the register is having the necessary qualifications at the time of registration. Once on the register, his name cannot be struck off, except for offences under section 12 and 23 of the Act, 1878. It is not an annual register.

"Mr. Justice Mathew said :—The applicant had, since 1867, practised in the metropolis as a dentist, and it was admitted that when the Act passed he would have been entitled to be registered as a dentist if an application has been made by him in accordance with the provisions of section 7. He had not, however, applied for registration in respect of this qualification. In 1878 he obtained from the Royal College of Surgeons, Ireland, a diploma in dentistry, and as a licentiate of this body, which was one of the medical authorities referred to in the Act he applied for and procured registration under the statute (section 6). The diploma had been granted on the terms that the holder should not seek to attract business by advertising or by any practice considered by the College unbecoming, and that the diploma might be cancelled on its being proved to the satisfaction of the President and Council that he had done so. In the year 1883, the Royal College of Surgeons of Ireland, upon the ground that Mr. Partridge had advertised for business, cancelled his diploma, and thereupon the General Council directed his name to be erased from the register. Section 11 contains provisions as to the corrections to be made from time to time in the register, and it was argued for the General Council that, where the original qualification no longer existed the Council were bound to correct the register and erase the name. It was argued for the applicant that the name of a person qualified either by practice or diploma and once properly placed on the register could only be erased in the manner and upon the grounds specified in the statute. It was urged that the mere fact that the diploma had been cancelled by the medical authority which had granted it was not a ground upon which the General Council was justified in disqualifying the applicant or exposing him to the penalties imposed by the act upon unqualified practitioners. We are of opinion that the contention of the applicant is right and that he is entitled to have his name restored. [His Lordship here read section 13, and also referred to section 15.] It appears to us that, in such a case as the present, the Medical Council possessed no further powers of dealing with the register than those conferred in the sections referred to. It was admitted that the council had not decided that Mr. Partridge had done anything to justify the removal of his name under section 13, but had considered that they were bound to erase his name when the determination of the medical authority granting the diploma had come to their knowledge. This is a course which, it seems to us, they were not entitled to adopt, otherwise where a medical authority has withdrawn a diploma on the ground, for instance, that a particular theory of dental surgery had been adopted or discarded, the name of the holder must be struck from the register. But this is a ground upon which the General Council under section 13 are expressly prohibited from erasing a name. The third clause of section 13 appears to show that the Council was not intended to be bound by any determination of the medical authority even with respect to the grounds for erasing a name specified in section 13, but was required to adjudicate independently. This view is strengthened by an examination of the provisions in the last clauses of sections 13 and 14. The Act appears to be carefully formed to restrict the right of the General Council to interfere with registered dental practitioners in the practice of their profession to the cases where there are the grave reasons for disqualification specified in section 13.

The rule for a *mandamus* was accordingly made absolute, but on an application on behalf of the Council was ordered not to be drawn up for a week.

Mr. Finlay, Q.C., and Mr. Lyon were for the applicant and Mr. Kennedy, Q.C. and Mr. Muir Mackenzie for the Council.

DENTAL BUSINESS AT THE GENERAL MEDICAL COUNCIL

May 19th. MR. JOHN MARSHALL, F.R.S. in the Chair.

REV. DR. HAUGHTON had given notice of the following motion. "That British physicians and surgeons, holding foreign diplomas in dentistry, shall have the option of their names and titles being recorded either on the British or Foreign lists at their own discretion, without being required to appear on both lists as if different persons, and that, in any case, their titles be recorded in decent Latin, and not in the 'jargon' used in medical prescriptions.

In referring to it he said ; This notice of motion was given before I was in full possession of the facts of the case, and when I came to London Mr. Miller showed me that the question had been under consideration here for six weeks, that Mr. Muir Mackenzie's opinion had been taken on it, and that the present Register of 1887 is exactly in conformity with the requirements of the Dental Act. He has shown me a way by which any dentist in the position that a friend of mine represented himself to be in, can gèt relief. You must, in this Register elect, either be a British dentist or a foreign dentist. If you are a British dentist, you can put down your British qualifications ; if you are a foreign dentist, although a British subject, you cannot put your British qualifications in the foreign register, and *vice versa.*

I need not say that the qualification in dentistry of the University of Harvard is high in the list, and gentlemen holding that are desirous to have it on the register. It is not the money that these gentlemen object to pay, but it is the doubtful identity that they complain of. Mr. Miller shows me that by cross references the same man is indicated. I speak on behalf of a very distinguished scholar, a Fellow of the College of Surgeons, and a Graduate of Dublin and of Harvard. After Mr. Miller's explanation, as far as the first part of the motion is concerned, I ask leave to withdraw it. Mr. Miller and I have arranged about the Latin at the end also, so that I may perhaps withdraw that too. The Latin is very curious. On page 226, the first name on the list is "Bell, D.M.D., University of Harvard, 1872." That is quite correct. Then there is "Herbert Cox, D.D.S., University of Michigan." That is also correct, remembering that the first name is in Latin, and the second in English. But "D.D.S." is returned in page 24, and "D.D.M." for the University of Harvard. The puzzle is what "D.D.M." signifies. Knowing that the University of Michigan gives its title in English, and Havard in Latin "D.D.M." does not represent what it ought. I consulted a person skilled in this particular kind of Latin, and he told me I was wrong, that they were both English, "D.D.M." meaning "Doctor of Divinity gone Mad," and "D.D.S." "Doctor of Divinity gone Sulky." Now as both those often occur no doubt he is correct. I withdraw the whole thing.

APPOINTMENTS.

Mr. George Holt, L.D.S. has been appointed Honorary Dentist to the Walmersley Branch (Bury) of the Northern Counties Hospital for Incurables.

Mr. E. Lloyd Williams to be Assistant Surgeon to the London Dental Hospital, Leicester Square.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

DENTISTS AND JURIES.

To the Editor of the "British Journal of Dental Science."

Dear Sir,

I believe it is not generally known in the Profession that Dentists may be called upon to serve on Juries. And for the benefit of those who have no desire to act in that capacity, I beg to say that if any names were put on the Jury list before the passing of the Dentist's Act, and no application has been made for their removal, that they are liable to be called upon to serve. A list is prepared every summer by the Overseers to whom all applications, where a claim to exemption exists, should be made.

Yours respectfully,
JOHN TAYLOR, L.D.S.
Museum Street, Warrington.

POPULAR DENTAL LECTURES.

To the Editor of the "British Journal of Dental Science."

Dear Sir,

I trust the subject of Popular Dental Lectures has not received its death blow; the late correspondence in the B. J. D. S. ought rather to open the eyes of many respectable men who are well qualified to deal with this subject;

and it is a subject worthy of the serious consideration of every practitioner who wishes to see his profession progress. Everywhere the cry is, more education, this is all right, but would it not be as well if we were to train our patients to follow our advance a little closer than they do at present, by imparting a little of our knowledge to them? Many of them are totally ignorant on dental matters, even down to the proper use of the tooth brush, though they may have used it daily all their lives. I think a half an hour's discourse on this and tooth powders alone would be beneficial both to patient and dentist, and speaking from personal observation I am confident it is the want of instruction on the intelligent use of the tooth brush that is to blame for three-fourths of our stopping failures.

There is a difficulty, I am aware, in arranging these lectures so that they are not delivered for the benefit of the lecturer alone, but there appears to me two very easy ways out of that difficulty, and as young practitioners are generally thought to have some selfish motive in all they undertake, I would suggest (1) That some of the older practitioners take up the subject, then there could be no question as to the motive of the Lecturer, or (2) What was suggested to me by Dr. G. Cunningham, and which is doubtless far preferable, is for the dentists of each town to form a local Society, and invite some dentist from another town to deliver a lecture in their town, in this case, the lecturer could not possibly derive any benefit.

There is just one other point I should like to mention, viz.: is it necessary that the history of dentistry should be dwelt on to any great length, and specimens of ancient and modern dentistry exhibited, this to me seems an undeniable advertisement, to my mind it would be better to ignore the mechanical branch and attach more importance to conservaitve dentistry, and the hygiene of the mouth, &c.

Lectures such as I have just sketched, might with advantage be delivered at public schools, if arrangements could be made with the various School Boards, and I would further suggest that teachers have powor to inflict slight punishment on any scholars who neglect proper cleansing of their teeth. I know one school where this is carried out, and it is easy to imagine in years to come, the feeling of thankfulness those pupils will bear towards the head of that establishment.

Trusting I have not trespassed too much on your valuable space, and that we shall hear the opinions of some of the prominent members of the profession on this subject.

I am, yours truly,

Manningham Lane,
Bradford.

A. HOWARTH, L.D.S. Eng.

THE TITLE OF D.D.S.

To the Editor of the "British Journal of Dental Science."

DEAR MR. EDITOR,

The title D.D.S. is an American Institution, and was first conferred in 1840 by the Baltimore College of Dental Surgery, since then other Colleges have been founded, which also confer this degree. The degree has not been considered a strictly medical one ranking on a par with the title, M.D. During the past year the question has been extensively debated in America, some taking the ground that dentistry was a profession *per se*, others contending that it was a speciality of medicine.

Those medical journals taking part in the discussion favoured the idea that dentistry was a specialty, as it rested on the same general foundation as medicine, viz.:—Anatomy, Physiology, Chemistry, Surgery, and Materia Medica. Notably among those who were very friendly towards the dentists was Dr. N. S. Davis, the father of the American Medical Association and President of the Ninth International Medical Congress. The A. M. A. has for a number of years had a section on Oral and Dental Surgery, but only those dentists possessing the degree M.D., were eligible to membership.

Dr. Davis at the meeting of the A. M. A., last week offered the following resolution,

Resolved, That the regular graduates of such dental and oral schools and colleges as require of their students a standard of preliminary or general education and a term of professional study equal to the best class of the medical colleges of this country, and embrace in their curriculum all the fundamental branches of medicine, differing chiefly by substituting practical and clinical instruction in dental and oral medicine and surgery, in place of practical and clinical instruction in general medicine and surgery, be recognised as members of the regular professsion of medicine, and eligible to membership in this association on the same conditions and subject to the same regulations as other members.

Dr. Davis in introducing the resolution said he wished to explain its object. "There are two objects to be had in view; first, to relieve a degree of embarassment that exists between the regular profession as we consider it and the profession of dentistry. The department of dental and oral surgery is a part of the profession of medicine as much as the department of ophthalmology or otology or any other ology. Our teeth and mouths are a part of our system as much as any other part, and are used more than any other part. The embarrassment is this: That in history the developement of dentistry originated mostly in mechanical operations. Steadily it has advanced and in years gone by—quite a number of years ago—our lamented S. D. Gross made a proposition that an oral and dental section be provided as a section in this association. It was seconded by Dr. Sayre and myself and it was organised. The International Medical Congress of 1881 provided a section for dental and oral surgery. The congress to be held in Washington has done the same thing, and it will be one of the most thorough and best organised sections in the congress. There is an embarassment in this respect. It is to know just who and by what line of demarkation those engaged in that department shall be recognised as members of the regular profession. Now it is proposed to make a line and draw it where this resolution says that all those who are qualified by general education and a term of study equal to the best medical colleges, a curriculum embraceing the entire fundamental principles of medicine with the provision that instead of special instruction in clinical surgery, instruction may be had in dental and oral surgery, such shall be recognised as members of the profession of medicine. It will take away a sort of embarrassment. There is a more far-reaching and more valuable underlying object in this resolution, and that is, that to be recognised as a member of the profession, if this resolution is adopted by this body, they must have the education received in schools that require these requirements, it makes a strong lever to lift up the course of study in the dental schools. Such are my reasons for bringing up the resolution. I will say nothing more on the subject.

The motion was made that the resolution be adopted by the Association, and it was carried unanimously.

I am, Your Obedient Servant,
J. G. HARPER, D.D.S.

St. Louis.

ANSWERS TO CORRESPONDENTS.

Dr J. Harper, St. Louis.—Thanks, we have received Archives of Dentistry for May & June, and congratulate you on these issues. The notice was accidentally omitted in our last issue.

"One who asks."—We believe Mr. Christopher Heaths Lectures will be issued in a seperate form, but you can read them as they come out in this journal.

Secretary Charing Cross Hospital.—Very sorry the matter is crowded out this issue, we will notice in our next, shall be glad of a brief abstract of speeches, etc.

Communications have been received from—

R. Howarth, Bradford; John Taylor, Warrington; Morton Smale, London; Mr. Forshaw, Bradford; G. H. Burker, Maidstone; Dr. John Harper, St. Louis; Dr. Cushing; Dr. Catching, Atlanta Ga; Mr. G. Holt, Bury; Dr. W. W. H. Thackstone, Atlantic Ga; Mr. Christopher Heath, F.R.C.S., London; "One who asks," London; Secretary Charing Cross Hospital; Secretary National Dental Hospital.

BOOKS AND JOURNALS RECEIVED :—

Mechanical Dentistry, by C. H. Hunter, Lockwood, Crosby & Co., Archives of Dentistry, British Medical Journal, Chemist and Druggist, Transactions of Pharmaceutical Society, Revue Odontologique, Journal British Dental Association, Glasgow Medical Journal, Grornale di Correspondenza, pei Dentisti, "South," "The Times."

TO CORRESPONDENTS.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., before the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer, which are no to be published when not desired.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, 289 & 291, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) . . 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 468. LONDON JULY 15, 1887 Vol. XXX.

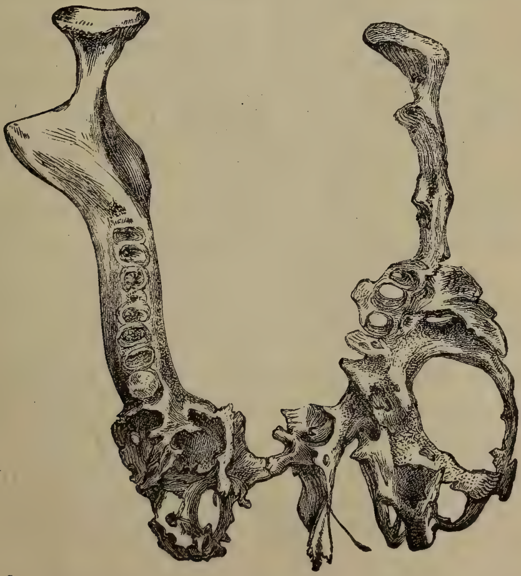
LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

(*continued from page* 614).

Multilocular cysts are more often found in the lower than in the upper jaw, and in most cases in direct connection with teeth or stumps. In the *Guy's Hospital Reports* for 1847 is the notice of a case of the kind by Dr. Wilks, in a girl, aged 18, in whom there had been an enlargement of the right side of the lower jaw for twelve years. The tumour, on removal, proved to be a cystic growth: "there being four or five large cells between the internal and external plates of bone, which appeared like expanded alveoli, all of them containing fangs of teeth. The cells contained a glairy fluid." Very considerable alteration in the form of the maxilla may be produced by growths of this kind, of which a good example is seen in the drawing (Fig. 15) from a macerated specimen in St. Bartholemew's Museum (1.308). Here the bone is irregularly expanded in great part to form septa between cysts. These, which were independent of one another, had

Fig. 15.

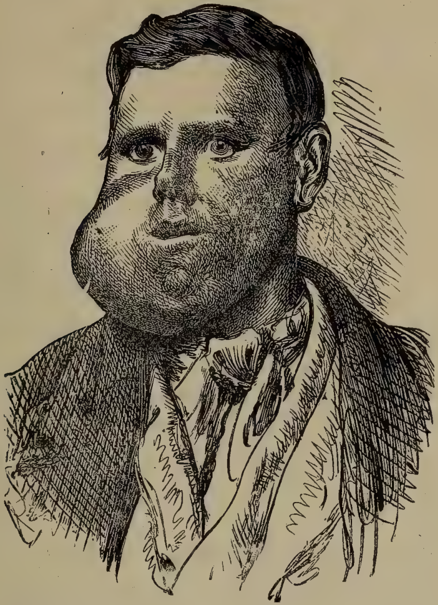


their origin in the interior of the bone, were lined by a highly vascular membrane, and contained thin serous, or grumous, blood-tinged fluid. The walls of some of the cysts were thin and yielding, but others were thick and resisting, and this was particularly the case with the most posterior cyst on the left side, which had pressed upon and caused absorption of the left ramus and coronoid process. The preparation was taken after death from an old man, aged 75, who had noticed the enlargement for five years when he came under Mr. Coote's care in St. Bartholomew's Hospital in 1857.

The microscopic character of the solid material found more or less in all cases of multilocular cyst is well given in the following report by Mr. Eve upon a very well-marked recent specimen of the disease, contributed to the St. Bartholomew's Hospital Museum (I. 536) by Mr. Keetley. "The solid portion of the tumour was composed of columns of cells and nuclei of the epithelial type, which, when cut transversely, presented the appearance of alveoli; similar small columns branched out from the side of the larger. The cells in the centre of the columns had in many places undergone a colloid change, and by the complete metamorphosis of the cells the cysts were formed. From the buccal mucous membrane covering the tumour in certain parts club-shaped and branching cylinders extended down from the deep stratum of the epithelium, as in the ordinary formation of epithelial cancer." Mr. Eve has found precisely the same characters in twelve specimens of multilocular cystic tumours he has examined, one of the most marked being a tumour of the upper jaw, removed by Mr. Liston in 1836, and referred to in his paper in the *Medico-Chirurgical Transactions*, Vol. XX., the tumour being now in the College of Surgeons' Museum (2202).

To show the identity of the foregoing with the tumours hitherto classed as "cystic sarcomata," I may quote the description of the microscopic appearances of a tumour of the latter kind removed by myself, in 1871, from a patient aged 22, whose portrait before the operation is given in Fig. 16. "The tumour was composed microscopically of straight or tortuous columns of epithelial cells, those forming the margin being elongated or cylindrical, and radiating towards the centre. At the margin of the small ulcerated opening in the gum, papillary processes extended downwards from the deep stratum of the epithelium, and were continuous with the columns forming the tumour" (College of Surgeons' Museum, 2203). The half of this tumour, deposited in the Museum of University College, is described in the valuable catalogue by Mr. Marcus Beck as a "gland-like tumour of bone," and its structure is identical with that of a tumour described by Mr. Wagstaffe, in the *Pathological Society's Transactions*, Vol. XXII. Mr. Wagstaffe found that the growth was composed of innumerable cysts and a solid matrix, through which a certain amount of bone was scattered; that the cysts were lined by a layer of large globular epithelium; that into the interior of the larger cysts other smaller cysts projected, and these endogenous cysts took their origin in the epithelial lining, and not in the

Fig. 16.



matrix of the growth. Other cysts were also freely scattered throughout the structure, but the endogenous formations were so marked that they could be discovered as little balls by the naked eye, and removed for examination by the point of a needle. The solid structure consisted of a very peculiar arrangement of what appeared to be acini or cylinders of closely-packed cells, supported by a fibro-nucleated matrix. These acini, or rods, in many places gave the appearance of tubes from the arrangement of their component cells, which resembled very curiously that of columnar epithelium, or of the epithelium of gland-follicles. The cut ends, however, showed no central canal. The constituents of these rods were nuclei embedded in plastic matter, and these separated by manipulation into small tailed or so-called spindle cells of similar size and character to the corpuscles of an ordinary sarcoma.

The contents of these cysts vary in consistency and colour in some cases being clear and limpid, in others almost gelatinous and of a dark colour.

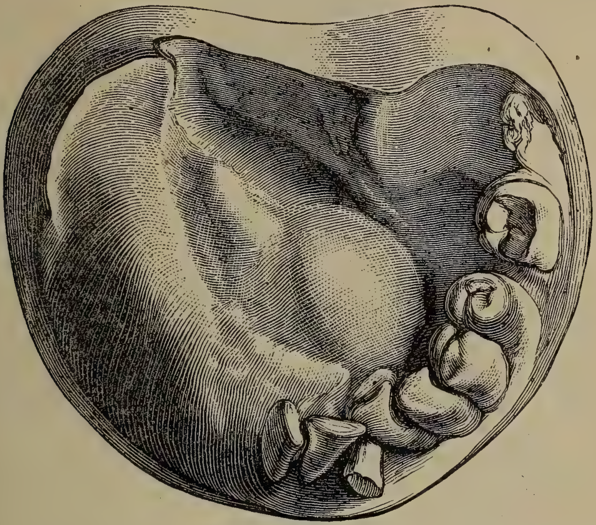
My attention was first directed to the fact that multilocular cystic disease is not always a simple local ailment by the case of a patient who was able to give me a "thirty-five years' history of a maxillary tumour," which I communicated in 1880 to the Association of Surgeons Practising Dental Surgery (*British Medical Journal*, May 22nd, 1880). The patient, when he first came under my notice in 1877, was a healthy country gentleman, who said that as long as he could remember there had been some enlargement of the right side of the lower jaw. In 1845 this enlargement increased very rapidly, and in 1847 Sir W. Fergusson removed a tumour of the right side, sawing through the ramus horizontally and the body of the jaw close to the canine tooth. The tumour was apparently of a fibroid character, having a large cyst developed in it, and is now in the Museum of King's College. He continued in good health for fifteen years, and then noticed the formation of a cyst in the incisor region, which had frequently been tapped by Sir W. Fergusson. In July, 1877, I found cystic disease of the left side of the body of the jaw extending to the molar region, and operated by extracting all the teeth, opening up the cysts freely, and clearing out some solid growth with the gouge. From this the patient made a good recovery, with considerable consolidation of the bone; but in the November following one cyst was found to have developed anew in the incisor region, and this was treated in a similar manner. A year later a fresh development of cyst had taken place, and the operation was repeated with a good result, so that in February, 1879, the jaw was completely consolidated and the patient was advised to have some artificial teeth fitted. In November, 1879, the patient reappeared with a large solid tumour involving the left side of the body of the jaw, which, noticed first in June, had grown rapidly of late, and now involved the skin for an area of a square inch. On December 2nd I removed the tumour by sawing through the bone immediately in front of the left masseter, and also removed a piece of infiltrated skin from the left of the median line. The wound was brought together with harelip-pins and sutures, and only one artery (facial) was ligatured. The patient made a good recovery, took food with a spoon, and was able to talk intelligibly after the first week, although now deprived of the entire body of the jaw. The lower end of the wound being left open, afforded a thorough drain for discharge. The patient returned early in February, when the skin near the wound was found to be increasingly infiltrated, and a tumour of the size of an orange was found beneath the right deltoid. He had strained the right arm in getting into a hip-bath, but it was quite clear that the humerus had not been struck. The tumour was painful, but the bone was sound, the head moving with the shaft. A week later the patient was found to have a tumour in the pelvis, pressing upon the rectum, and springing from the interior of the right innominate bone. From this time he gradually lost strength, and died at the end of March. The second tumour was pronounced by Mr. Doran to be a round-celled sarcoma, and the same growth was found in the piece of skin that was removed. The earlier tumour appeared to be a fibroid or a spindle-celled sarcoma. No *post-*

mortem examination of the internal growths could be obtained.

The specimen is preserved in the Museum of the College of Surgeons (2204), and Mr. Eve's further examination confirms the fact that the bulk of the tumour is round-celled sarcoma, but in addition the upper portion of tumour contains isolated masses composed of tortuous closely-crowded columns of small epithelial cells.

The second case bearing upon the same question was in a woman aged 44, who was admitted into University College Hospital, on November 3rd, 1875, with the following history. About nine years before, the patient first noticed a lump of the size of a pea beneath the tongue, on the right side, which gave her some pain, and for which a tooth was extracted. From that time she had a succession of abscesses (?) in the lower jaw, some of which discharged in the mouth, and one externally, and for which she had several teeth extracted. Dr. Parsons, of Dover, had sent her to me three years before, and I then recommended her to come into the hospital; but she declined, and went on with a steadily increasing tumour of the lower jaw on the right side. About nine months before admission, the tumour seems to have begun to increase with some rapidity, and within the last two months the following characteristic event happened. While eating, the patient felt a sudden crack in the lower jaw, and this occurred twice in the same week; and upon each occasion she felt great pain in the floor of the mouth and upon moving the tongue. Upon admission, there was really very little to be seen externally, and a photograph taken at the time shows that, excepting a very small projection beneath the skin in front of the angle of the jaw, there was nothing to call attention to the patient's face. On looking into the mouth, however, the tumour was at once obvious, and is seen in a cast taken from the jaw at that time (Fig. 17). The right side of the lower jaw is seen to be greatly expanded from immediately in front of the ramus to beyond the median line, the tumour measuring two inches across at the broadest part, and reaching under the tongue. Its surface was lobulated and rounded, firm and osseous in the greater part, but yielding distinctly on pressure in two or three places. The mucous membrane was entire over the tumour, except at one point where there was an opening, from which a discharge constantly exuded. The incisor teeth of the right side were displaced over to the opposite side, and were loose. The central incisor of the left side was displaced completely in front of the other teeth. The left canine and bicuspids were firmly fixed. Notwithstanding the size of the tumour, the outline of the lower border of the jaw was scarcely interfered with, the disease being mainly confined to the alveolar portion of the bone; and I, therefore, decided to operate from within the mouth, so as to avoid, if possible, all external scar.

Fig. 17.



On November 10th the patient was put under chloroform, and, a gag having been introduced be the left side, I first extracted the four incisors, and then made a free incision with a stout scalpel along the upper surface of the tumour, cutting easily through the thin bone and thick membrane forming its upper wall. A quantity of dark-coloured cystic fluid at once escaped, and I then cleared out the semi-solid contents with the finger and gouge. The finger introduced into the cavity passed completely under the canine and bicuspid teeth of the opposite side without disturbing them. I next cut away a portion of the cyst-wall with scissors, and crushed together the remainder, as far as I could, with my fingers and thumb. The actual cautery was applied to one spouting vessel in the margin of the alveolus, and the cavity was stuffed with lint dipped in a solution of chloride of zinc (twenty grains to the ounce).

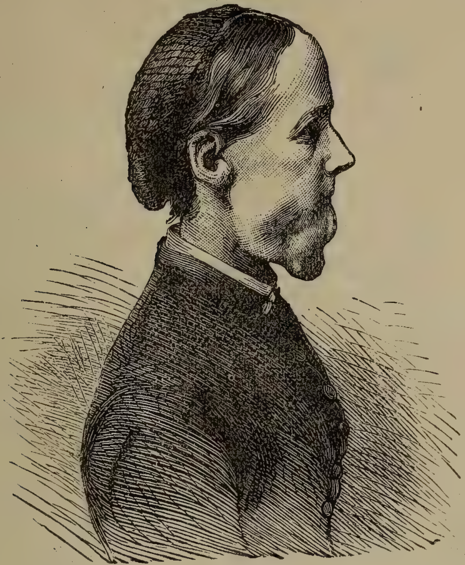
The patient had very little constitutional disturbance; the plugs were gradually removed from the cavity of the jaw, which was carefully syringed out frequently with Condy's fluid, and soon began to granulate and fill up. The patient was discharged a month after the operation, when the two plates of the lower jaw had come together, and the cavity was filled up almost completely by granulation-tissue, there being only a shallow cavity half an inch long still to be filled up midway between the angle and the symphisis.

This patient again presented herself in October, 1878, nearly three years after the first operation, with a recurrence of the cysts, which were treated again by the gouging and crushing in. In August, 1882, she again appeared with a formidable tumour of the lower jaw, which had already sprouted through the chin at more than one point (Fig. 18). There could be no question now of the necessity for excising the portion of jaw involved, and this I accordingly did, removing from an inch in front of the angle on the left side to the right temporo-maxillary articulation. The patient made a good recovery, and has remained well.

There can, then, I think, be no doubt that under the term "multilocular cystic epithelial tumour," as proposed by Mr. Eve, we may include the old multilocular cysts and cystic sarcomata, both having a distinct tendency to be reproduced both locally, and in certain cases to become disseminated.

Treatment.—Mr. Butcher, of Dublin, has for some years treated cases of multilocular cyst of the lower jaw through the mouth, by dividing the mucous membrane over the cyst freely, and then with gouge and bone-forceps removing the expanded external plate of the bone, with the contents and lining membrane of the cyst. In this operation, the teeth are interfered with as little as possible, and appear to remain firm. Granulations rapidly spring up from the denuded bone, and fill the wound made in the mouth; the cheek resumes its ordinary appearance, and no deformity or scar is left. In his work on *Operative and Conservative Surgery*, Mr. Butcher narrates three cases treated in this manner, and remarks that "the proceeding according to this plan is troublesome and difficult, but its value to the patient in having no deformity left is priceless." A valuable caution is here given respecting the facial artery, which might, without care, be divided from within the mouth in a position where it would be very difficult to secure it. Mr. Butcher also narrates and gives a drawing of a case in which, finding the disease too extensive to be treated from the mouth, he adopted Dupuytren's external incision, and then levelled the projection to the line of the healthy bone with the best results, the incision being completely hidden behind the bone.

Fig. 18.



Dr. Mason Warren has also (*Boston Medical and Surgical Journal*, 1866) written upon the treatment of cysts of the jaws, and strongly recommends a milder and even more conservative practice than that followed by Mr. Butcher, which he thus summarises : " The treatment consisted in the puncture of the sac within the mouth, evacuating its contents, and at the same time obliterating its cavity by crushing in its walls ; and lastly, in keeping up, by injections, etc., a sufficient degree degree of irritation to favour the desposition of new bone."

I have now treated a considerable number of simple and multilocular cysts by Mr. Butcher's method, and, as has been noted, with recurrence in at least two of the latter. Mr. Butcher does not appear to have met with further trouble in his cases, and this may depend upon his " carrying out the gouging fearlessly and far wide of the disease." I should in future be guided by the age of the patient and the amount of solid material found in the cysts. In young persons with cysts having fluid contents and little growth in the bone, I should be still inclined to adopt palliative measures and to gouge very freely, carefully watching the case with a view to a more radical proceeding, should further development take place. In cases of much solid deposit in connection with multilocular cysts, and still more in cases of solid tumour with one or more large cysts, there should, I think, be no doubt as to the removal of one-half or more of the lower jaw, or of any portion of the upper jaw involved.

COCAINE AND ITS USE AS A LOCAL ANÆSTHETIC IN DENTAL SURGERY*

By William Hern, M.R.C.S. & L.D.S. Eng.
Assistant Dental Surgeon to the Dental and Middlesex Hospitals.

Mr. President and Gentlemen,

Among practitioners of surgery there has long existed a cherished dream of finding a reliable local anæsthetic. This desire has of late years been increasing in ever-widening circles in proportion to the growing demands and possibilities of modern surgery in its many branches. In no branch, however, has this solicitude for a local obtundent of pain been more marked and accentuated than in that of dental surgery, due, I imagine, in part to the very extended field of action which is there afforded to such an agent, but chiefly to a keenly felt necessity resulting from the lively and hyperæsthetic sensations of the great fifth nerve with which it has to deal. The numerous and various remedies which have from time to time been suggested and recommended to meet this craving, together with the fashionable demand which has greeted their *entrée* to the stage of therapeutics, also demonstrates the universality of the desire of the profession to be free from an admitted *opprobrium* of their calling—the unavoidable necessity of inflicting pain.

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* A Paper read before the Odontological Society of Great Britain.

The introduction of cocaine two or three years ago as an agent for producing local anæsthesia roused such widespread excitement amongst those engaged in the practice both of general and special surgery, that a sort of cocaine fever prevailed for a considerable time, which it has taken most of the intervening period to allay.

There seems to be a tendency during the feverish *furore* which frequently heralds the appearance of a new therapeutical remedy, te indulge in romantic fancies as to the virtues of the fledgeling, and to imagine that a panacea has been unearthed; a prognostication which later history and trial does not usually substantiate. It therefore becomes us now, after a fair period of probation of the drug cocaine, to sift and weigh the *pros* and *cons* of its action and uses, in order to confirm or modify any previous conceptions or conclusions as to its merits.

The opinions entertained as to the employment of cocaine, and the results that have been obtained by experiment or otherwise in its therapeutical application, which are scattered up and down throughout recent medical and dental literature, are so varied, and frequently so antagonistic and irreconcileable, that very many persons still remain in a state of suspended judgment as to the practical uses of the drug. With a view of assisting any who may be thus situated to come to a decision, I propose to bring before you, in as condensed and epitomised a form as possible, some of the recorded successes on the one hand, and of failures on the other, and, with the results of my own experiments with the drug in a few cases, to draw such conclusions as these taken together may in my opinion justify.

Cocaine is obtained from the leaves of the *Erythroxylon coca*, a shrub cultivated on the slopes of the Andes, and in other parts of South America. The coca plant has been celebrated for many years amongst natives of South America as a medicine and a beverage, and seems to serve them as a substitute for the tea, coffee, tobacco, opium, &c., of other nations; the leaves, which are held in high repute by the Indians as a nutriment and restorative, are commonly used by them as a masticatory, and are considered absolutely essential for the endurance of fatigue and exertion. The alkaloid has a bitterish taste, and forms small colourless inodorous crystals; it has an alkaline reaction, and is soluble in 1 in 700 of water, 1 in 20 of alcohol, freely so in chloroform and ether, oils and fats. It is very sensitive to chemical and physical reaction, readily yielding derivatives; it melts at 98° C.

Its salts, of which the hydrochlorate and citrate are the chief for our purposes, are for the most part freely soluble in water.

The hydrochlorate is a white amorphous powder, freely soluble in water, spirit, and glycerine; insoluble in ether, fats and oils.

The citrate is found in small white deliquescent crystals, and readily dissolves in water and oils.

Before entering upon the more important and practical part of my subject, it will be instructive to review the physiological action of the drug with which we are dealing. In this connection the experiments of Dr. Mantegazza, of Milan, with infusions of the coca leaves on himself and other persons, will be interesting.*

He found that an infusion of the leaves taken internally considerably increased the frequency of the pulse, being twice as powerful a stimulant as tea or coffee.

An infusion prepared from three drams of the leaves produced a feverish condition, with increased heat of skin, palpitation of heart, headache, noise in the ears, and vertigo; the pulse rose from 70 to 134, there was an apparent enlargement of the intellectual horizon, and a peculiar, hardly describable feeling of increased strength and impulse to exertion. An infusion prepared from four drams of the leaves produced a peculiar feeling of isolation from the exernal world, followed by one of general torpidity combined with a feeling of intense comfort and an intuitive wish not to move about during the whole day; consciousness being all the time perfectly clear. After a while sleep comes on, from which the patient awakes free from toxic symptoms. A dose prepared from 18 drams of the leaves produced a rapid rise in the pulse, followed by delirium; but after three hours' sleep Dr. Mantegazza was perfectly free from toxic symptoms, and could immediately follow his vocation without the least indisposition.

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* *Pharm. Journ.*, 1860. *Ex. Oesterreichische Zeitschrift fur Praktische Heilkunde*, November 4, 1859.

Dr. Hughes Bennett was, I think, the first in this country to extract the alkaloid, and to investigate its physiological properties in 1873.*

After a careful experimental investigation into the action of theine, caffeine, cocaine, &c., he came to the conclusion that these principles were to all appearances identical in physiological action when administered hypodermically. His experiments were performed on warm and cold-blooded animals, and his conclusions are as follows :—

I. In small doses not ending fatally it causes—
  a. Cerebral excitement.
  b. Partial general loss of sensibility.
II. In doses subsequently fatal it induces prior to death—
  a. Cerebral excitement.
  b. Complete general loss of sensibility.
  c. Tetanic spasms and convulsions.
III. It destroys the excitability of the posterior columns of the cord, and the entire system of peripheral sensory nerves, but the anterior columns of the cord and the peripheral motor nerves remain intact.
IV. It causes spontaneous convulsions, but unlike those produced by strychnia, they are not excited by peripheral irritation, owing to paralysis of sensory nerves.
V. It first increases, then impedes, and lastly stops respirations.
VI. It increases, then finally diminishes, the force and frequency of the heart's contractions.
VII. It produces first contraction, and afterwards dilatation of the capillaries and small blood vessels, with stasis of the blood.
VIII. Special experiments proved that the nerve endings in skin and mucous membranes were rendered inexcitable, apart from any action the drug had on the nervous centres.

Dr. Hermann Biggs, of New York, in an exhaustive Enquiry on the Phisiological Action of Cocaine on the frog, conducted under the direction of Professor Christiani, in the

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* Thesis to University of Edinburgh. *Edin. Med. Journ.*, October, 1873.

Physiological Laboratory of Du Bois Raymond, at Berlin,* concluded as follows :—That from the local and constitutional effects of cocaine on the different organs and tissues, it is highly probable that its general action is a purely local one, exercised on those parts for which it has a chemical affinity through the medium of the blood.

On Respiration :—

First increases the number of respirations, then decreases them.

In larger doses, death ensues from paralysis of respiration.

On heart :—

Depressant action, reducing the force and frequency of pulsations, finally arresting auricles and venticles in diastole.

On the Nervous System :—

Small doses heighten the irritability of sensory fibres, but exert no effect on motor filaments. It increases irritability of the cord for a short time.

Large doses almost completely paralyse sensory filaments, and greatly diminish the irritability of motor filaments.

In 1 per cent. solution applied directly to the nerve trunks, it will, after a transient period of increased irritability, depress greatly and finally paralyse the nerve.

On Voluntary Muscles :—

Small doses have little effect on the excitability of voluntary muscles.

Large doses diminish their contractility very decidedly ; contractions become shorter and more feeble ; musculars excitability is soon exhausted.

Dr. G. H. Beyer, in a valuable experimental paper on the Physiological Action of Cocaine,† finds that Cocaine is exceedingly prompt and uniform in its effect on the heart.

I. In small doses it is a powerful stimulant to the heart's action.

II. In medium doses it has inhibitory influence over ventricular contractions.

III. In large doses it produces diastolic arrest.

IV. In small or large doses it produces constriction of the blood vessels independently of the central nervous system.

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* *Lancet*, January, 1885.

† *M. T.*, November, 1885. *Ex. Amer. Journ. Med. Scieuce*, 1885.

V. It produces a rise in the blood pressure succeeded by a fall.

Grunhagen and Berthold ascertained that the injection of cocaine in *moderate doses* increases the blood pressure, due, they believe, to the excitation of the vaso-motor centre, since it does not occur after section of the cervical swelling of the cord. In larger doses, a fall in the blood pressure takes place, due to paralysis of the vaso-motor centre.

M. Laborde,* or Paris, in a report to the Biological Society on Cocaine, gives his results as follows:—

On Nervous System.—It acts apparently as a stimulus on the motor nerves, and with a contrary effect on the sensory.

Circulating System.—Central and peripheral blood pressure is increased.

Respiration.—Respirations are quickened and very irregular.

Reflex Action is unimpaired.

Selection.—Very slight effect; urine lessened and secretion of submaxillary gland increased.

Tonic effects are very slight; very large doses must be given to determine symptoms of poisoning.

M. Arloing, in his researches on the Physiological Action of Cocaine, concludes that hydrochlorate of cocaine is a purely local anæsthetic; contact of the terminal nerve plates with cocaine being the principle cause of anæsthesia.

Professor Da Costa,† in a paper read at the Philadelphia College of Physicians in 1884, gives the results of his investigations on cocaine by hypodermic injection, on a number of well and sick patients, the purport of which was as follows:—

No decided effect can be produced by any dose less than 8 minims of 4 per cent. solution (= about ⅓ grain of hydrochlorate of cocaine).

½ grain showed effects more strikingly.

1 grain was used in some cases.

The effects on the part injected depend upon whether the injection be superficial or deep-seated: if the former, local anæsthesia is not marked.

Temperature is raised ½ to 1½ degrees, the increase not taking place abruptly, and being maintained for several hours.

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* *B. M. J.*, January, 1885.

† *Med Times*, November, 1885.

Circulation.—The pulse may be faster or slower, but invariably becomes fuller and stronger.

The character of the pulse was ascertained by many sphygmographic observations taken at intervals of fifteen minutes after the injection, the sphygmograph being kept in place to ensure uniformity. There was some general reduction of sensibility, whatever the dose employed, although not to any marked extent.

Professor Da Costa considers that the effect on the temperature and pulse recorded in these observations suggest the application of cocaine in many a condition of collapse, of weak heart, or heart failure.

(*To be continued.*)

ON THE PHYSIOLOGICAL ACTION OF COCAINE ON THE LOWER ANIMALS AND MAN, AND ITS USE IN DENTAL SURGERY.

By George Cunningham, B.A. (Cantab.); D.M.D., (Harvard)L.D.S. (England).

(*Concluded from page* 622.)

Operations and Results.—With regard to the operation performed or desired to be performed, and the result obtained, a more accurate estimate is formed by a consideration not of the number of cases, but of the number of individuals treated. In endeavouring to gain a knowledge of the physiological action of the drug on man, we must regard the results of observation in this way.

The results of the operation of extractions show that in four individuals (Cases 1, 8, 9, 10, 11, 26) pain was felt, but it was not great. The drug gave them resolution and fortitude.

Case 6 was a similar one, except that the toxic effects were too serious to merit it being termed even a qualified success. In four individuals (Cases 12, 16*a*, 22, 24) no diminution of sensibility whatever was produced.

For extirpation of the pulp it was a success in Case 2, while in three individuals (Cases 16, 19, 14) it failed to relieve the pain at all, or it was impossible to operate.

For the excavation of sensitive dentine, in two individuals Cases 3, 15) there was no re gatpain, and the patients felt

RECORD OF CASES IN WHICH A TEN PER CENT. SOLUTION OF COCAINE HYDROCHLORATE WAS HYPODERMICALLY INJECTED FOR DENTAL OPERATIONS.

Case No.	Condition of the Operation Field.	Minims Injected.	Operation Performed.	Result.	Observations on the Pulse.				Subjective Phenomena.	Objective Phenomena.	Mental Changes.	REMARKS.
					Before Injection	Acceleration. Time.	Degree.	Relative Increase.				
1	Carious left lower M_3. Male, æt. 38	15	Extraction	"Not painless, but pain small" ...	82	10 min.	93	11	Slight faintness and giddiness; slight numbness in arms and hands, great numbness in jaw; slight uneasiness in precordial region; difficulty in swallowing.	Cessation of salivary secretion...	Vivid interest in the operation; increased mental clearness; loquacity very marked.	Normal pulse 72·4. After-effects, slight nausea and disinclination to eat; pulse normal in four hours.
2	Carious left lower B_2. Male ..	10	Pulp extirpated	Almost painlessly	82	8 min.	96	14	Similar, only very slight	None	Drowsiness, followed by vivid consciousness.	No after effects.
3	Very sensitive caries in upper left incisors. Male.	10	Cavities excavated and filled.	"No great pain"	83	10 min.	102	19	,, ,, ,,	,, ...	,, ,, ,,	No after effects, operation lasted one hour; pulse normal in three hours.
4	— — Male.	None, water only	— —	No effect	85	15 min.	82-3	-3-2	Very slight faintness	Cessation of salivary secretion; swelling of upper lip, which subsided in three hours after the operation.	None	Patient ignorant of the fraud.
5	Sensitive upper right incisor roots. Male.	10	Fixing porcelain crowns ...	No pain	82-3	12 min.	107	25-4	Faintness more marked; jaws slightly numbed, and difficulty in swallowing.	Sobbing, lachrymation, and laboured respiration.	Drowsiness, followed by vivid consciousness. None observed.	No appreciable after effects; pulse normal in three hours.
6	Acute periostitis of upper right canine (root). Female, æt. 30.	5	None	Gum insensitive, but root sensitive to percussion.	85	10 min.	112	27	Faintness	Restlessness of head and body	,, ,, ...	Second injection nineteen minutes after the first.
,,	,, ,, ,,	5	Extraction	"Very little pain"	?	5 min.	120	?	Second fainting attack	None observed	Usual loquacity	The operation was rendered extremely difficult from the irregular position of the second bicuspid, which it was desirable should not be injured.
7	Upper right first molar, acute alveolar abscess. Male, æt. 21.	6	Exploration, &c.	General pain ceased with injection.	72	13 min.	106	34	Patient felt warm and lively... ...	,, ...	,, ,, ...	
,,	,, ,, ,,	8	Crown fractured (3 teeth) in a clump).	Tooth sensitive to pressure	84	20 min.	100	6	Patient "felt queer about the temples."	,, ...	,, ,, ...	Three hours' interval between second and third injections.
8	,, ,, ,,	8	Difficult extraction (3 roots).	"Very little pain"	74	15 min.	108	·34	Giddiness	,, ...		
9	Lower left I_1; right I_1, I_2, B_2, B_2, and two molar roots, decayed and loose. Female, æt. 45.	15	Easy extractions	"Felt extractions, but not much pain."	96	15 min.	112	16	None	None	Loquacious and very confident, instead of very despondent as before the injection, dread and fear quite disappeared.	Patient felt as "if she had had a glass of champagne." One half of drug injected anteriorly, the other posteriorly (bicuspid region). Patient in very poor health.
10	Upper right I^1, I^2, C, (M_1, M_2 roots). ,, ,,	12	,, ,, ...	,, ,, ,,	—	—	—	—	,, ...	,, ...	,, ,, ,,	,, ,, ,, ,,
11	Upper left I_1, I_2, C, and M_2 ...	12	,, ,, ...	,, ,, ,,	—	—	—	—	,, ...		,, ,, ,,	,, ,, , ,,
12	Lower right B_1, periostitis. Female, æt., 55	10	Easy extractions	"No diminution of sensibility" ...	similar	to others,	record	lost.	None	None	Slight loquacity	A confirmed invalid; operation at patient's house with her medical attendant.
13	Upper left I_1, acute periostitis. Male, æt. 40	7	None	General pain relieved, but tooth sensitive to the slightest pressure.	72	10 min.	80	8	Great faintness, general feeling of cold; precordial uneasiness.	Profuse perspiration; great trembling in the extremities.	Usual loquacity; disturbed about his next sermon.	It was impossible to carry out the intended operation, viz., opening up pulp cavity to remove the irritant.
,,	. ,, ,,	10	,, ...	,, ,, ,,	,,	,,	,,	,,	None	None	,, ,, ,,	Second injection three-quarters of an hour after the first.
14	Upper left B_1, B_2, pulps exposed. Male, æt. 21 ...	10	None	Impossible to operate	76	20 min.	116		Immediate faintness, recurring faintings for one-and-a-half hours; severe pain in abdomen, also eyes, neck and head; general sensation of extreme cold.	Patient very restless, can't be still, convulsive movements; in twelve minutes numbness in left arm, then cramps in the abdomen; irregular and violent spontaneous muscular contractions left and then right arm, left and then both legs, amounting to convulsions; lack of co-ordination, and loss of power in lower limbs, hence inability to walk for fully two hours; severe spasmodic and laboured respiration at repeated intervals; chattering jaws.	Loquacity very marked at first; attacks of drowsiness. Patient didn't seem anxious about his alarming condition.	Sal volatile, and later brandy, administered on the fainting attacks recurring. The alarming effects lasted over one-and-a-half hours. In two hours a medical practitioner arrived; recommended hot mustard foot-bath and the patient to be put in bed. Patient walked, even with help, like a very drunken man, in two-and-a-half hours to a cab, was assisted home and treated as recommended. In six hours the doctor found him up and about again.

RECORD OF CASES IN WHICH A TEN PER CENT. SOLUTION OF COCAINE HYDROCHLORATE WAS HYPODERMICALLY INJECTED FOR DENTAL OPERATIONS—*continued.*

Case No.	Condition of the Operation Field.	Minims Injected.	Operation Performed.	Result.	Observations on the Pulse.				Subjective Phenomena.	Objective Phenomena.	Mental Changes.	REMARKS.
					Pefore Injection	Acceleration.						
						Time.	Degree.	Relative Increase				
15	Very sensitive dentine. Female, æt. 30	10	Excavation	"Thought it helped me to bear the operation better."	80	10 min.	98	18	Faintness	Hysterical	None observed	Patient under rubber-dam.
16	Exposed pulp. Male, æt. 22 ...	10	Endeavoured to removed the pulp.	Failure	80	15 min.	100	20	Faintness and nausea...	None	Usual loquacity.	
„	„ „	3	„ „ „	„	—	—	—	—	None	„	„ „	Local applications of acid nitrate of mercury were more effective in removing the pulp.
16*a*	„ „ „ Lower right M_1 root	5	Extraction easy	„	—	—	—	—	„	„	— — —	Easy extraction. slight attachment. One-and-a-quarter hours after previous injection.
17	„ „ „ Left upper I^1 root, acute inflammation of gum, fistulous opening. Male, æt. 25.	10	Lanced gum and burred out abscess cavity.	Failure, except when operating on superficial layer of gums.	86	5 min.	100	14	Slight faintness	Passing tremors in left leg; usual dryness of mouth and fauces.	Usual loquacity.	
18	Right lower I_1, with painful swollen gum. Male, æt. 30.	5	Lanced gum and burred out abscess cavity.	Superficial parts numbed, deeper extremely sensitive.	75	5 min.	84	9	Two fainting attacks	None	„ „	In twenty minutes pulse normal and patient all right.
19	Right upper B_2, exposed pulp. Male, æt. 18	8	Operation interrupted ...	Failure	70	15 min.	96	26	Fainted...	Lachrymation	None observed.	
20	Right upper M^1. sensitive carious dentine. Male, æt. 23.	7 (carbolised sol. 2°/₀)	Tried to excavate the putrid irritant dentine.	Failure, but neuralgic pain relieved	70	15 min.	88	18	Faintness; great pain referred to lower external angle of orbit.	Tremors in both legs.	Loquacity; "felt calm"	Acute pain on inserting dressing, although a 20 per cent. solution cocaine was applied locally for ten minutes.
21	Inverted upper central incisors. Female, æt. 23	9	Wedging and excavation ...	"Could not have been more painful."	80	30 min.	122	42	None	Characteristic respiration, hysterical; half-an-hour spontaneous muscular twitchings and cramp in lower limbs, cramped cold hands; one-and-a-quarter hour, found loss of power and lack of co-ordination in upper extremities	In five minutes patient dazed, silent, staring, and could not answer either entreaty or threats, although most desirous of doing so.	In two hours co-ordination normal; after effects, malaise and disinclination to eat, although fasting.
22	Fractured right lower M_3, tilted and deep in ramus of jaw. Male, æt. 20.	5	Extraction (very difficult and prolonged).	Failure	76	10 min.	90	14	None	None	None	"I won't have cocaine again."
23	Right lower B_2, acute periostitis with considerable swelling. Male, æt. 25.	10	None	Complete loss of sensibility, and could clash his jaws together.	sphygmographic tracings taken instead.				Precordial uneasiness and disagreeable sensations in the abdomen; tingling of fingers and intolerance to light; aphrodisiac effect.	Arrest of salivary secretion; respiration irregular and laboured; largely dilated pupil; lack of musclar co-ordination.	Loquacity very marked; great activity of idealisation centres; drowsiness, confusion of ideas.	After effects, disinclination to eat after seven hours' fast; disturbed sleep; great depression all next day.
24	Left lower M_2, very carious ...	10	Extraction	Distinctly painful	72	13 min.	128	56	Intestinal uneasiness	Dilated pupils; spontaneous muscular movements, especially left leg; respiration irregular and laboured.	Loquacity very marked; other symptoms similar, but not so marked as before.	"My second and last time of taking cocaine. I will never employ it in my practice.'
„	„ „ „											
„	„ „ „	5	Replantation	Painful	72	1 min.	108	36				
25	Right upper B^1 and B_2 roots. slight periostitis. Male, æt. 21	5 (carbolised sol. 2°/₀)	Adjusting gold bands for porcelain crowns	Both roots sensitive to the pressure.	60	10 min.	104	44	Slight giddiness; tingling sensations, most intense in the fingers.	Complete cessation of salivary secretion; in 10 minutes, tremor in hands; in 12, spontaneous muscular contractions only in left hand; in 15, saliva beginning to flow; in 16, marked tremors in both legs for five minutes; in 23, involuntary contractions of extensors, opening closed left hand; in 30, no muscular contractions, only a shaky hand.	Marked loquacity; activity of idealisation centres.	
26	Right upper roots ... ... „ „ „ „ „	10 (carbolised sol. 2°/₀)	Extraction	„ „ „	60	8 min.	110	50	Numbness in extremities, tingling sensations.	Similar to 25, but more intense; general coldness of the skin; marked long-continued contraction of the erectores spinæ.	„ „ „	"I shall always want cocaine in long dental operations."
27	Right upper M_1, broken down roots. Male, æt. 20.	5	None	None	74	6 min.	120	46	Precordial uneasiness (slight) ..			
„	„ „ „	4	Extraction (difficult)	Painful	120	18 min.	„	0		In five minutes, cessation of salivary secretion, acceleration of respiration; slight muscular contraction in arms.	Loquacity as usual	Patient would have his hands held, yet the injection enabled him to tolerate the operation. He has been a vegetarian and teetotaller all his life. Peculiarly nervous patient.

their powers of endurance increased; while in two individuals (Cases 20, 21) it was an absolute failure.

On analysis of the other cases, it will be seen that in cases of severe pain from acute periostitis, the injection relieved the general neuralgic pain (Cases 7, 13, 20, 23). As a rule, neither the general nor the local effect is sufficiently great to relieve the periosteum from pain on pressure (Cases 6, 7, 13, 25, and 26). Where the constitutional effects are serious, as in Case 23, there is complete anæsthesia of the periosteum.

Pulse.—The length of time taken by the pulse to reach its highest point of acceleration varies greatly in different individuals, without bearing any relation to the amount of the drug exhibited, or giving any trustworthy indication as to the best moment for operation.

The period of time necessary for a return to the normal, varies in a similar manner within even greater limits.

In Cases 1, 2, 3, and 5, doses on the same individual, repeated at some days' interval, show a continual increase of acceleration, and, curiously enough, the first and largest of the doses gives the least acceleration. Relatively the larger doses do not seem to accelerate the pulse so much as small doses. The greatest increase observed was 56 beats to the minute, with a dose of 10 minims (Case 24), reached in 13 minutes, causing no faintness; while the smallest increase was 8 beats with the same dose within 10 minutes, causing a severe fainting attack (Case 13).

The pulse gives no certain indication of the best time to execute a short and painful operation.

Subjective Phenomena.—The subjective phenomena observed included "light-headedness," giddiness, faintness in all degrees, uneasiness in the precordial region, intolerance to light, tingling sensations in extremities, and irritable sensations of the skin. The frequency of these is remarkable. Out of nineteen individuals, only three (doses ½, 1, and 1½ grs.) presented no subjective phenomena. These three patients included the two invalids. In the remaining sixteen cases, where the phenomena were more or less marked, several were sufficiently severely attacked, mostly from faintness, so as to preclude the execution or progress of the operation.

Dr. Sandré, of Vienna, has recorded some cases in which injection of cocaine produced very extraordinary effects by excitation of sexual desires, manifested by objective phenomena. It is interesting to note that in the course of an hour after injection one of my patients says that it had a marked aphrodisiac effect upon him.

Objective Phenomena.—The objective phenomena observed included the characteristic change in respiration already referred to, irregular spontaneous muscular contractions, even amounting to convulsions, partial loss of power and lack of co-ordination of muscular movement, the cessation of the salivary secretion, profuse perspiration, and dilatation of the pupil.

The muscular phenomena are most frequent, and may be be very serious, as in Cases 14, 23, and 24.

The restlessness affecting the head may be compared with the pendulous movements of the head produced by toxic doses in dogs and other animals. It is certainly of no aid or advantage in dental operations, and may be sufficient to prove a positive bar to their progress.

The dilatation of the pupil is not quite constant in man, which is seemingly a contradiction to Von Anrep's experience that it is constant in all warm-blooded animals. Possibly, though it is not so stated, he included the effects produced by local application, which would explain the difference observed.

The partial or complete cessation of the secretion of saliva is quite frequent, if not constant, and gives rise, doubtlessly, to the feeling of dryness in the mouth and fauces. This would therefore be a slight addition to the comfort of some patients in long operations, where the flow of saliva is often so excessive and discomforting.

Out of nineteen individuals, only in six were there no noticeable objective phenomena. From the observer being often engrossed in the dental operation, such phenomena may easily escape observation.

In at least three individuals the phenomena were decidedly serious, and one case (14) gave me more anxiety than I have ever had or hope to have in the whole of my professional experience.

It is important and curious to note that in some cases objective phenomena, such as cramps, tremors, cold "dead" hands, and even a general marked lowering of the temperature of the skin, gave rise to no unpleasant feelings, but often to quite pleasureable sensations on the part of the patient, probably owing to the exhilaration of the mental faculties.

Mental Changes.—The mental changes are curious, and seem to vary not so much with the amount exhibited, but rather with the degree of susceptibility of the individual. In favourable cases the drug merely acts as a cerebral stimulent, and, as these patients remark, it gives themthe power to endure any pain incident to the operation. It gives resolution and fortitude to the irresolute. If we could so confine the action of cocaine it would indeed be a most valuable adjunct to the true anæsthetics. The very frequent indifference to surroundings and what is being done produced by this cerebral stimulation seems the main factor in explanating the so-called anæsthetic effect of the drug, and not so much the limited superficial anæsthesia produced by the direct contact of the drug with the nerve of the part through injection.

In the most severe cases, such as Cases 23 and 24, a very decided increase in the activity of the flow of ideas appeared which soon passed away to be followed by a drowsy or sleepy state.

The loquacity frequently observed is very curious, but unimportant except as a sign of increased cerebral activity.

Remarks.—The after effects are slight or inappreciable in the majority of cases. Nausea, disinclination to eat, sleeplessness, constipation, depression have been observed.*

As restoratives, strong tea or coffee seem to recommend themselves more than amyl nitrite, nitro-glycerine, or alcoholic stimulants.

Conclusions.

1. As a local anæsthetic, apart from its general effects, cocaine, administered by injection, destroys the sensibility of the nerves of the part in the immediate surrounding of the injection.

2. The nerve supply of a tooth being deeply situated is not affected by superficial injections under the mucous membrane.

3. Its general effects, by its influence on cerebral functions producing the symptoms already discussed, seem to fully explain the successful results following its local injection.

4. Therefore the administration of cocaine by injection may have a limited field of usefulness in prolonged dental operations, preferably by small doses ($\frac{1}{2}$ grain), repeated at intervals ; even then, only to be resorted to in exceptional cases.

5. As an anæsthetic for the painless extraction of teeth, it is not to be compared with nitrous oxide, whether regarded as to its efficiency, its safety, or its certainty of action.

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* In my original notes, I indicated the time allowed to elapse between the injection and the time of operation, also some other points, but I felt the table was already sufficiently complex, and no adequate gain was derivable from complicating it further.

6. It appears from one case (No. 14) that very alarming results may attend the administration of even an ordinary dose to an apparently healthy individual, and further, it is not improbable that even greater injurious effects may be encountered with the extended use of cocaine administered by injection.

Cocaine, once thought to be isolated in the sphere of pharmocology, is now known to have as analogues, brucine, and more lately, drumine. Whether they will have a more extended field of usefulness remains to be seen.

I cannot conclude without expressing my great obligations to Professor Roy for the experimental facilities afforded in the Pathological Laboratory of the University of Cambridge; to Mr. Griffiths, his demonstrator, for most valuable help and assistance; and finally, to Mr. Faesch, for general assistance.

DRUMINE NOT AN ANÆSTHETIC AT ALL!—Some time since, the supposed active principle of Euphorbia Drummundii was brought forward by Dr. Reid as a local anæsthetic under the name of Drumine. The properties of the substance have been tried by Dr. Ogston who utterly failed to achieve the successes Dr. Reid laid claim. The matter has now been definitely cleared up by Mr. Tanner who carefully examined a specimen of "drumine" and discovered it to be merely "oxalate of calcium" in an impure condition. Thus explodes another scientific bubble!

FLIES IN THE OPERATING ROOM.—Every one must have experienced the intolerable nuisance flies are during the summer in the waiting and operating rooms. In Switzerland oil of bays (huile de laurier) is used to prevent the visits of these "household friends" A coat of this oil is applied to the walls which effectually excludes flies of all kinds. This remedy has also been tried and found effectual in the south of France in preserving gilt frames, chandeliers, &c., from becoming soiled. It is even remarked that flies soon avoid the rooms where the application has been employed.

British Journal of Dental Science.

LONDON, JULY 15, 1887.

THE COCAINE FURORE.

Among the many debts which the profession owes to the Odontological Society, not the least is the attention that body has recently bestowed up Cocaine. The paper by Dr. Cunningham which is appearing in our columns deals with what may be called the physiological side, while Mr. Hern's paper treats more upon the clinical aspect of the action cocaine exerts upon the organism, so that we may now consider that the dental world knows something very definite about cocaine. At first we ventured to preach caution and to urge those members of the dental profession who followed Mr. May's example and experimented, to have a care lest the drug which appeared such a boon should eventuate quite the reverse. Among therapeutic agents which have sprung into sudden prominence and gained the loudest plaudits, those used for producing anæsthesia have enjoyed pre-eminence. Ether at one time was vaunted to the utmost, but after a short-lived period of of supremacy was dethroned in favour of chloroform, a substance which, as we now know, possesses many draw backs and is fast giving place in popular esteem to its old rival, ether. Ethidine, methylene, bromide of ethyl, each and all were ushered into notice with the loudest of jubilates but cocaine has surpassed them all in the mushroom growth of its popularity. Even when we knew little or nothing of cocaine's action upon the healthy organism, to say nothing of its behaviour upon persons enfeebled by disease or privation, its advocates employed it with the utmost assurance, if not recklessness, asseverating to their patients, that while absolute immunity from pain would be secured by its use, no possible evil results could accrue. More cautious men have been carried away by the furore, and believing they were in possession of a panacea against all pain, did not stop to ask whether it was itself free from danger, they subjected delicate and diseased individuals to the influence of cocaine without care or caution. Of course, such a wholesale adoption of cocaine could lead to but one result, the unpleasant experience of many patients and their attendants. The occurrence of a death from the drug steadied the rough-and-tumble method so commonly adopted in its use, and induced men to pause and consider whether cocaine was exactly devoid of danger. Then it was found that persons were most differently affected by it, and this explained much of the highfaluting which had been written about "splendid results," "absolutely no evil consequences" and much more to the same effect. A closer scrutiny revealed the fact that some observers had contented themselves with experimenting upon themselves or had accepted the evidence of a few cases as substantiating the conclusions they based upon them.

The journals now became full of cases showing untoward symptoms following the use of the drug, and it seemed likely that a revultion of feeling as extreme was likely to occur, a revultion in every way as unreasonable as was the original demonstration in its favour.

The truth as is usually the case, lies in the happy medium. For many purposes cocaine is undeniably useful and valuable, but at the same time it is unreliable, for while its answers its purpose admirably in one case, it fails utterly in another. In this lies one of the great disadvantages of cocaine, you are never sure of its fulfilling the service you require of it, while on the other hand, you cannot in any case be free from the danger that the most untoward symptoms may ensue upon its exhibition. The reality of these symptoms have now been abundantly testified to and the symptoms themselves should be familiar to the mind of every dental practitioner who uses the drug. Indeed it would appear to be his duty to make his patients fully alive to possible after-effects before injecting the anæsthetic.

To no class of men is it a matter of greater importance than to dentists to avoid the occurrence of "a scene" in the consulting room. However skilful, however earnestly solicitous a dentist may be about the welfare of his patients, he will with difficulty be exonerated from blame should a patient faint, grow sick, evince hallucination or become delirious as a result of a drug given by him. The public are not as a rule lenient in passing judgment in such cases, impelled by sentiment will laud the production of good results, but will cudgel very shrewdly the reputation of a man who either fails in bringing about the desired result or who renders his patient really ill even if the indisposition be only temporary. It would appear that no means exists by which the most knowing can determine before hand what persons will evince toxic symptoms after taking cocaine. We are certain, from the researches of Van Anrep and others that the heart is very profoundly affected, while a degree of mental excitement and perturbation may follow, alarming if not actually dangerous. Of course it is true enough that these disagreeable symptoms may not recur once in very many persons, but the single occurrence is bad enough and may do the most material damage alike to patient and dentist. It is now a well attested fact that the magnitude of the dose cannot be taken as a guide, for some individuals succumb to very minute quantities while others will tolerate a heavy dose appearing in no respect the worse for it. One of the lessons taught by the recent discussion seems to be that when absolute immunity from pain is essential, cocaine cannot be relied upon and the dose required frequently results in more or less severe toxic phenomena.

THE JUBILEE AND ITS SEQUEL.—All ranks and classes have had the opportunity during the past month of greeting our most gracious Sovereign, Queen Victoria, and all alike have rejoiced to show their loyalty and accord a most hearty welcome to Her Majesty, while they wished her God speed and many more happy years of life. Her Majesty has seen fit to hold up some few of her liege subjects to special honour and distinction, and the following names known to us are, we believe, but a first instalment of honours yet to be bestowed.

Dr. Garrod; G. H. Macleod, Esq., surgeon to the Queen, Edinburgh; Dr. Aitken, of Netley Hospital; George Martin Holloway, Esq., brother-in-law of and successor to the late Thomas Holloway; W. C. Leng, Esq., proprietor of the Sheffield *Telegraph*, and once a chemist and druggist; and H. Doulton, Esq., of the famous Lambeth Potteries, maker of filters and chemical stoneware, on whom knighthoods have been conferred, John Simon, Esq., M.D., C.B., late medical officer Privy Council Office, and Arthur Mitchell, Esq., M.D., C.B., Lunacy Commissioner, Scotland, are to be K.C.B's. Mr. John William Akerman, Speakor of the Legislative Council of Natal, who is made a Knight Commander of the order of St. Michael and St. George, was, we believe. at one time engaged in the drug trade at Pietermaritzburg, Dr. James Alexander Grant, of Ottawa, also receives the K.C.M. G.

The Ross Light.—This new method of lighting seems to offer special advantages for dentists. Ordinary gas brackets may be used, the burner and tap being replaced by a cylindrical tube, in which the wick is placed. The oil is supplied from a main reservoir to the gas-burners by means of pipes (ordinary gas-pipes) The oil is so placed that the supply is at a constant level, so that there is no possibility of leakage at the burners. So far as the oil supply is concerned, it is, therefore, perfectly automatic. The usefulness of the "Ross," patent does not consist solely in these arrangements, however. It is well known that oil lamps do not burn brightly without a current of air, which is generally induced by a chimney In the "Ross" system there is no chimney, but air is supplied to the flame from a meter by pipes exactly in the same manner as gas is supplied. The meter contains compressed air, and this rushes to each flame with considerable force, and changes the dull, smoky flame to one of brilliant whiteness. The light resembles an ordinary gas flame, but is much pleasanter to the eyes. Mr. Boverton Redwood, who has reported upon the system, says that as regards safety the burner remains remarkably cool, and the oil in the small chamber beneath the burner does not, even after six hours' burning, acquire a temperature more than 16° Fahr. higher than that of the surrounding air; the system is thoroughly efficient and economical. The company, we understand, propose to fix up fittings where desired on the three years' system, and they claim that the cost of the fittings and supply of oil for that period will be less than the sum of the gas bills. This is based on such a calculation as the following:—30,000 feet of gas, at 4s. per 1,000, costs £6.; oil at 5d. per gallon sufficient to give the same amount of light costs £1 7s. 6d.—that is, 2¼ gallons of oil give a 16 candle power light for 200 hours, which represents the capabilities of 1,000 feet of gas.

CHRONIC DIARRHŒA FOLLOWING THE WEARING OF A VULCANITE PLATE.—Dr. Bryant of Pittsfield records the case of a young man, aged 23, who, from being a robust vigorous man became much wasted, despondent and even obliged to forsake his studies as a medical student owing to a constant and unconquerable diarrhœa. For about six years he had been and was still wearing an upper plate of red vulcanite containing the two superior central incisors. On learning that his trouble commenced in about three months after the teeth were made and had continued ever since, it was recommended that he at once discontinue the use of the plate, and the advice was followed, and in less than two months a very marked improvement was the result, in fact he was nearly well, and there never has been a recurrence of the trouble. He is now a healthy young merchant.

PAPAYOTIN IN FISSURES OF THE TONGUE.—Professor Schwimmer reports excellent results from the use of papayotin in fissures of the tongue, after chromic acid, iodoform, and nitrate of silver had failed. The papayotin was administered in the following form:

℞. Papayotin...............1 to 2 parts.
Distilled water ....
Glycerine ....aa 10 „

This solution is to be applied with a camel's hair brush, rom two to six times a day, the tongue having been previously well dried. There is no maceration, as would be supposed, but the mixture stops the pain and seems to cause a renewal of the epithelium. Schwimmer reports twenty-five cases, some of several years' duration ; and complete cure was effected in all except one, which was syphilitic, though specific treatment gave us no good result. But in this case papayotin ameliorated the condition of the tongue.

THE DENTAL HOSPITAL OF LONDON CONVERSAZIONE AND DISTRIBUTION OF PRIZES.—The Medical Council have issued invitations for a conversazione to be held on Thursday, July 21st, prox. at the Rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square. Professor John Marshall, F.R.S., President of the Royal Medical Council, will distribute the prizes to the successful students at 9 p.m. Messrs. Samuel Cartwright and George Gregson will receive guests at 8.30. and after the distribution, music will be provided, when we may hope to hear some old friends whose performances are always a delight. At 10.30. Mr. Eric Lewis will be present, and those who know that gentleman's powers will show a wise discretion if they are present also. The evening promises to be altogether a charming one, and such we have no doubt, it will be.

Abstracts of British & Foreign Journals.

WESTERN DENTAL JOURNAL.

TIN AND GOLD AS A MATERIAL FOR FILLING TEETH.*

BY W. C. BARREET, M.D., D.D.S., BUFFALO, N. Y.

A sheet of No. 4 gold is laid upon a sheet of No. 3 tin, and with the shears they are together cut into about three strips, the whole length of the sheets. This will cause the edges of both to adhere, and they can be rolled into a rope, or cut into pellets, or be made into cylinders. They are then manipulated into a filling in the same manner that tin alone should be used. Hand pressure is mainly to be depended upon, although the mallet may be used. The rubber dam should usually be applied before commencing, But absolute dryness is not as essential with this material. A little moisture is not fatal to success.

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* Read before the Kansas State Dental Association, April, 1887.

1st. He regards tin and gold a good filling because it is easily inserted. The two foils when thus made into a rope work quite differently from anything else.

2nd. It is one of the most durable fillings known.

3rd. It may be very rapidly worked. The time required for inserting a tin and gold filling need not be more than for thoroughly condensing an amalgam one.

4th. It will, in a little time, present a very hard and dense surface, that will be nearly as resistive of masticating attrition as the best amalgam or gold.

5th. It presents, in the course of its crystallization, some changes that make it antiseptic. All who remember that the septic and antiseptic conditions of the mouth practically control the progress of caries, will appreciate the importance of this.

6th. Teeth that, on account of the pain arising from thermal changes, cannot well be filled with gold, are perfectly comfortable under tin and gold.

Referring to the ease of its insertion, and the rapidity with which it can be worked he says, it works so "soft" that a large pellet can be easily thrust, under the point of a condenser, into a remote corner of a cavity, and under-cuts can be readily filled that it would be impossible to thoroughly stop with gold.

It will lie readily against the walls of any cavity, and it does not curl up like gold. It is so soft that it can be placed in absolute contact with the cervical walls of proximal cavities, and is the most certain material that can be used in that most dangerous locality. In nearly all large cavities that are to be filled withgold, tin and gold may be used at the cervical margin. It will adapt itself so absolutely to the inequalities of the surfaces, it is so readily placed against any frail walls, and it is so impervious to moisture, that it seems especially intended for just such places. Gold is easily condensed upon it and readily adheres to it, if the surface of tin and gold is not made too smooth.

When a tooth is especially sensitive, or when there is decay in the neighbourhood of the pulp, use tin and gold over the sensitive portions, thermal changes will soon cease to trouble. When filling a large crown cavity, use tin and gold till the cavity is nearly full, and then to finish with gold.

The two metals being brought into relationship as when the foils are rolled together, a slow crystallization occurs and finally the whole hardens as much as an amalgam filling. The action of gold in the presence of tin is peculiar. Tin placed upon a plate of gold and submitted to the blow-pipe, cuts a hole directly through the gold and drops out, even when the temperature is far below the melting point of gold. If the tin be flowed upon pure gold, the latter becomes so brittle that it will crumble beneath the fingers. It only requires a temperature sufficient to allow the re-crystallization of the two metals. This peculiarity accounts for the changes when the two foils are intimately mixed together.

In the process of this crystallization there is a very slight expansion, and this is sufficient to more thoroughly stop the cavity. The process of crystallization also develops an antiseptic quality that tends greatly to the preservation of the tooth and the filling.

It is this re-crystallization that gives the very hard and dense surface that makes such an excellent masticating cover. The filling will become as dark as a light amalgam, but it never stains the tooth like the latter. After it has been in the tooth for some time it will usually be mistaken for an amalgan filling, and testing it with an excavator will not reveal the difference until the instrument has penetrated the filling, when it will be seen that it does not cut like the coarse alloys, but with a very fine grain.

It is especially useful in the mouths of children. It can be put in frail temporary teeth, being preferable to amalgam. It will not do for contour fillings.

THE USES OF THE CEMENTS IN DENTAL PRACTICE.*

By A. H. Thompson, D.D.S., Topeka, Kansas.

The valuable quality of the cements, is their clinging tenaciously to the tooth substance and thereby forming a more perfect contact than other filling material. Moisture may come also from the tooth substance itself and capillary attractions draws not only this, but also the external moisture around the filling between it and the tooth, it follows that mere mechanical exclusion can never be made perfect. With the principle of cement adhesive contact follows, by which the filling becomes as one piece with the tooth substance to which it clings, the exclusion of all moisture is absolute. Not only this, but the cement also closes the tubuli, so that the creeping out of moisture is prevented. No other materials possess these qualities in sufficient quantity to be of any value whatever.

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*Read before the Kansas State Dental Association, at Topeka, April 27, 1887

On account of the adhesive contact principle, another useful service is endowed by the cements in lining large cavities and strengthening weak walls. For this purpose they have been in use for some years. It is a more or less prevalent rule in practice that all cavities which will permit it should have a layer of cement in the deeper portion, after thorough cleansing of the cavity, except, of course, the ruptured dentine in the direction of the pulp, the cavity is nearly filled with cement, carefully placed in contact with all sides while in a sticky clinging condition. After hardening, the cement is cut out to sufficient depth to retain the metal filling and the margins carefully prepared. In all soft teeth the cavities should be lined with cement in very soft teeth, contact with the metals that will preserve the teeth from caries, is almost impossible ; that such teeth are rarely preserved with gold and that amalgam must depend upon its oxidation for the preservation of the tooth substance around it. In such teeth lining with cement is useful. This is accomplished by filling the deep portions of the cavity up to the margins of the enamel with cement, and then inserting sufficient of the metal filling to protect the cement from wear. Tooth substance can often be well preserved by filling the overhangings with cement. Thus labial walls of just proximate cavities in the anterior teeth should be lined with white cement to give lighter colour to the exposed face of the tooth, as well as to support and retain more of the tooth substance. There are manifold places in which cement lining can be employed with advantage, and it should be made a rule to line all cavities of sufficient depth to permit it.

Cements should be used in the treatment of sensitive dentine, or temporary filling for a few weeks. It is recommended to fill all cavities that are sensitive with cement for from two to six weeks to overcome the sensibility. Sometimes it is necessary to renew the cement once or twice, but the sensitiveness can always be reduced sufficiently to allow all comfortable and thorough work. The irritable condition should be allayed, not only on account of the suffering avoided, but for safety to the tooth and pulp, for there is more or less congestion if not inflammation in those tissues.

The writer insists strongly that only by the use of cements can sensitive dentine be effectually treated, other means are only temporarily successful or lead to destruction of the pulp.

The writer's experience is that the phosphate cements, are not especially liable to produce death of the pulp. It does not follow except when the pulp is in a condition to render such a result possible under any filling. Aching pulps are sometimes, though rarely, preserved alive under favourable conditions and in favourable organizations, but zinc phosphates, with proper precautions, of course, does not show a larger percentage of deaths, than any other temporary filling. The precaution that should be taken under any filling, when the pulp is exposed or even approached, is to place a protecting cover over that portion of the cavity of carbonized paper or gutta percha, etc., or anything that will protect from irritation of every kind. This is absolutely necessary in deep cavities under any material, a non-conducting irritation preventing insultation.

Another advantage in the cements, they cause the tooth substance near the cement to harden by long contact, thus rendering it better able to receive the impact of filling with gold and less sensitive of caries afterwards.

In the permanent teeth during the years of childhood, while the dental tissues are yet soft and incomplete, the cements are employed for their hardening as well as their better preservation during the growing years. The first molars, which almost invariably decay early, as well as the incisors, should be filled with cement to harden them for better fillings at a later period. The fact is being more generally recognized that during the soft years of the teeth, they should be filled with soft fillings, and when the child is older and the teeth become harder, these fillings can be replaced with gold with a better prospect of success. Fortunately, the writer says, for the children of this age, the absurd idea that children's teeth must be filled just as those of adults, is passing away. The permanent teeth before maturity of the individual, are rarely sufficiently dense to allow of the successful employment of gold, so that a soft filling should be inserted until that density is acquired. The best material for this purpose is cement, carefully inserted and renewed when necessary, until the teeth are hardened.

The cements are especially valuable also for the filling of children's teeth. With the little three and four year olds, perfect cleaning and preparation of the cavity of many is impractical, and without preparation this material will preserve the body teeth very well, and is better adapted to their soft and porous nature than any other filling. It is generally very durable and can be easily renewed if it does wear out. It is necessary to have all the substance possible over the the pulp, cleaning only the margins of the cavity.

At the opposite end of life, in filling the teeth of the aged which are often soft and extensively callous, cement often answers an excellent purpose.

As a permanent filling material, of course cement has not as yet, much value, although some kinds in favourable mouths frequently last a long time. But so much depends upon the quality of the saliva that no expectation can be placed upon their durability as compared with the metals. Yet there has been such rapid improvement in the durable qualities that we are using cement more and more for permanent work. As the quality of permanence increases, there will be positive advancement in the field of amalgam, with a corresponding benefit to the artistic qualities of plastic fillings. There is a solid advance and we can not but hope for further improvement in this direction. In crown and bridge work, of course, cement is an indispensable adjunct and renders this beautiful work possible. Cements with peculiar qualities adapted to this work are now being supplied to us to assist in increasing our accomplishments in this direction.

THE DENTAL REGISTER.

THE USE & ABUSE OF THE TEETH,

By Louis P. Bethell, D.D.S.

> "Indigestion that conscience of every bad stomach
> Will relentlessly gnaw and pursue with some ache,
> Or some pain."

Indigestion is partially, if not wholly, due to the improper use of the teeth in mastication? The jaws have three movements in mastication, namely: Forward and backward, as in biting, from side to side, as in cutting, and downward. In trituration all three movements occur in rapid succession, and with a little time, food will be crushed and properly prepared for deglutition. It is, therefore, better to take too much than not enough time in performing this important function.

People should avoid the habit of using but one side of the arch in mastication, as the teeth on the other side not only become sore from want of use, but also diseased. Further, there are many instances where the excessive use of one side only has deformed the jaw, increased the size of one partoid gland with the other, as a matter of course, from want of stimulation and use, shrunk up or became decreased in size and in consequence deformity resulted.

Although mastication is the principal use of the teeth it is by no means the only one. Nut-cracking, biting wire, are deprecated, biting hard candy should likewise be avoided, and drinking alternately hot and cold liquids, or taking anything into the mouth that will produce much of a thermal change, for such tends to fracture the enamel, as bodies expand by heat and contract by cold.

The beauty of a face can be attributed in a measure to the presence of the teeth supporting as they do the lips and cheeks. To a certain extent they give expression to the face. They assist greatly in the art of speech and are articles of beauty in themselves when properly treated and cared for. Singularly enough they are sometimes used to assist in the sense of hearing; deaf mutes can be made to hear through the intervention of an audiphone between the teeth. Notches in or between the teeth are worn by excessively holding clay pipes.

It is a pernicious habit to probe the teeth with pins, needles, gold toothpicks, etc., where only quill or wood should be used in consequence of the injurious effect liable to occur. Biting thread so often indulged in by the ladies is a dangerous practice.

Again, how careless many are in subjecting the teeth to the action of vegetable acids such as malic in apples, citric in lemons, tartaric in grapes, acetic in vinegar, lacetic in beets, also generated by the fermentation of milk and sugar in the mouth; all of which act injuriously on tooth substance. After partaking of any of these the teeth should be brushed and the mouth thoroughly rinsed with pure water or an alkaline wash.

SECONDARY OR NEW FORMATIONS OF TEETH.

By Wm. A. Powers.

Secondary dentine.—A new growth of dentine more or less regular in formation, is excited by abrasion, decay, or mechanical injury by which the dentinal fibres are subjected to irritation at their distal ends. It is deposited upon the walls of the pulp chamber and reduces its size. It is distinguished by its appearance. The tubuli usuy all change their direction somewhat and there is a diminution in their numbers The exact change varies in different cases. Usually there is a difference in the colour of the new formation.

The deposit is said to be more extensive in the incisors and cuspids than in the molars. In the molars the formation is confined almost entirely to the bulb of the pulp, extending into the root portion very little. The deposit is quite uniform on the walls of the chamber. It is remarkable that when there is considerable wear of the teeth generally those which have escaped abrasion will have about the same amount of secondary dentine as those which have been abraded.

When the deposit is excited by caries it differs from that excited by abrasion. As has been seen the growth caused by abrasion was quite generally deposited upon the walls, while that resulting from caries is usually confined to a part of the pulp chamber immediately opposite the carious portion. It is thought by some authors that any considerable growth of secondary dentine is followed by exhaustion and finally death to the pulp. These formations are mostly found in persons of middle age, occasionally in young persons, and they also occur in cases where the irritation has been long continued. Oftener found in teeth having many cavities than than those comparatively free from decay.

Osteo-dentine.—A hard substance more analogous to bone than dentine, deposited on the inside of dentine usually after the age of twenty. The entire pulp is sometimes converted into this substance. This term excludes all formations in which are not found bone corpuscles. In human teeth these are very rare, but are frequently met with in the teeth of animals, especially large animals. They present the general characteristics of cementum and are found in the root canal either attached to the dentine or slightly separated from it. Dentinal tumors in the pulp chamber are forms of secondary dentine which are sometimes seen. Masses of calcific material attached to the wall of the pulp chamber by a stem or pedicle. The tubules have no definite direction but curl, curve, and branch ending in blind extremities. The causes which produce the growth are similar to those forming secondary dentine generally.

Calcification of Pulp Tissues. Infiltration of the pulp tissues with lime salts. As a rule the form of the tissue elements is not preserved sufficiently well to identify it as pulp tissue, although there is occasionally such a case. They have generally a smooth surface and quite regular outline. Accompanying tissue calcification, we have degeneration of the remaining pulp tissue. Sometimes the calcification involves the entire pulp; the new formation perfectly fitting the walls of the pulp chamber. These masses are evidently formed very slowly and may begin at any part of the pulp.

Cylindrical Calcification is a peculiar form of interstitial calcification of the pulp occurring only in the root canal. It occurs in patients of all ages, but more frequently in middle life. In the early stages the calcific material is found in the tissues in extremely small spindle-shaped, or cylindrical masses. A pulp having these formations will be somewhat stiffened so that it will retain its shape after being bent. As the calcification progresses the cylinders become attached to each other, but preserve their jointed appearance, being connected by fibres.

Pulp Nodules.—These irregular nodular masses may be found in any part of the pulp-tissue, but oftener occur in the coronal portion, or near the junction of this with the root portion. Irregular in form and nodulated, very hard, and composed of the same material as dentine, but structurally different, they are not calcifications of the pulp tissue, but deposits in the inter-spaces, making room for themselves by crowding or pushing the tissues aside. These should not be confounded with calcific degeneration of the tissue-fibres which become infused with lime-salts. Both are irregular bodies, and are sometimes found together. The nodules found in the root portion of the canal are smoother than those in the coronal, and more prone to contain calcified tissues. They are more frequently in the teeth of middle-aged and old people than in the young. They appear to give no trouble, unless by their size they obstruct the circulation, or impinge upon nerve fibres.

Calco-globular is associated with pulp-nodules, and has the same form of elements, but is soft, while the nodule is hard. It is usually found near the point of exposure, many times lying directly beneath the layer of odontoblasts but not infrequently found deeper. It is found in irregular masses sometimes of considerable size. The artificial formation of these bodies seems to require a solution of albumen, salts of lime, and carbonic acid.

Exostosis.—This formation only occurs on the root, and it usually commences at or near the apex, extending from that point upwards towards the crown, covering more or less of the external surface. Sometimes it begins on the side, and a large deposit of osseous matter takes place ; again the bony substance is regularly deposited over nearly the whole surface of the root. It is generally dense in structure, of a slight yellowish hue, and semi-transparent. Usually it is a mere increase of the normal tissue without vessels. Sometimes, however, blood-vessels are involved in the growth. It may be cancellated and porous. We may consider it as layers of tooth-bone formed by hypertrophic action, the laminæ quite marked, while the lacunæ are large and abundant.

Literary Notices and Selections.

SCIENCE AND DENTISTRY.

By T. D. Shumway, Boston Mass.

(*Continued from page* 391.)

As the tendency of all the atoms of which bodies are made is always to assume the same definite shape, if heat be applied to the foil the crystals are liberated, and if percussion is then added the result is a pure crystallisation. The action of heat and force is well understood when applied to other metals. The axles of car-wheels are molecular or fibrous when first constructed, but by use, with the immense weight they are made to carry, they become crystalline. Now, a crystalline body is as unsuited to come in contact with the walls of the dentine as would be a cobble-stone in the hole which a woodpecker had made in a tree. Gold possesses the property of uniting with itself, forming one solid or compact body. This union of the particles takes place at an insensible distance, like the uniting of two drops of water, and is said to be in obedience to the law of cohesive attraction. The aggregation of homogeneous particles is not advanced by percussion.

Pounding gold into the teeth with a mallet does not add to the cohesive property of the material. It will make a beautiful piece of work when viewed simply from the mechanical stand-point, but, by changing the physical properties of the gold, is not only dangerous, but positively injurious. It is so opposed by the operation of crystalline and molecular forces, on which the health of the teeth depends. That sort of teeth escape injury from pounding, is due to the strong dense character of the dentine, as the result of a conservation in force. As crystalline bodies are definitely affected by magnetism, the experiments of Palmer and Chase, which established the electrical affinity of gold for tooth substance, show how unscientific it is to add to crystallisation by the use of the mallet. I would not be understood as condemning the use of cohesive gold. On the contrary, I recognise its exceeding value and importance. Its laminated crystals in surface peculiarly adapts it to supply the place of the enamel, to protect the molecular or fibrous structure of the dentine. This meets the law of correspondence the same as does the outer skin of the body, or the bark of a tree. To maintain a scientific method in filling teeth when the highest law in physics can only be perceived, not known, I am aware seems paradoxical. But consistency is not always to be found in the higher conception of the truth.

As a part of the matter which this paper contains is somewhat original, it may partially account for the imperfect way in which it has been presented. I am conscious of its elementary character, but this was made so by necessity. That the theory advanced is open to objection, I am fully aware. If a theory had no objection it would become a law, and this, a recognised at the outset, can only be perceived, not known. The fair way to test any theory is to compare it with other theories, and see if, on the whole, the balance of probability is not in its favour.

A great deal has been said about the necessity of a better recognition of dentistry by the medical profession. I confess this matter has had very little interest for me. There is no occasion for fear lest the world will not, in the long run, estimate any commodity we may bring to market at its full value. The way for the dentist to get recognition is to prove himself worthy of it. I know of no better way to accomplish this object than for the whole profession to have a unity of purpose. One of the means to bring about this union, and to my mind a very important one, is to have a uniform method in filling teeth, based upon recognised principles in science. How much more effective would be our dental schools in fixing a standard for the profession, if the student could be instructed in a method of practice based upon well-known scientific principles, rather than an eclecticism, such as is now too prevalent, in which the student simply pays his money and takes his choice! The operation which the dentist is called upon most frequently to perform should be made the easiest and simplest, instead of the hardest and most difficult. Filling teeth with gold should be a pleasant task to one who has voluntarily chosen it as a life-work. The reason why it is so difficult to master this material, I am convinced, is because the method of using it is opposed by natural law. If there is to be a scientific method in practice, a unity of purpose in the profession, and a higher standard for dentistry, it must have its basis in the conservation of force, the highest law in physical science. *Dental Cosmos.*

MALLETS AND MALLETING.

By G. S. Salomon, D.D.S., Chicago, Ill.

(*concluded from page* 639.)

Probably the mallet used before that date was of iron or steel, although the mallet which Dr. Atkinson speaks of was made of wood, but it did not require a great while to prove that a heavier one would answer the purpose and do the work better; in consequence thereof some of the wood was drilled out and filled with lead. This was the original lead mallet which was soon after replaced by the entire leaden and steel mallet.

Before the days of the mallet, teeth were filled for the purpose of saving them when the mallet and the welding property of the gold became known, dentists became aware of the fact that artistic work could be performed by building out the gold so as to restore the contour of the teeth fully as well as to simply fill the cavities. Now then, begins the era of contour work, but the calculations were not made on a scientific basis, if they were on an artistic one. The preparation of the cavities was overlooked. While using hand-pressure, cavities were simply scooped out, shallow cavities were filled, and strange it seems to a great many of the younger men of the profession, how fillings were retained in teeth for years and years, which would seem almost an impossibility to do to-day, by those who were taught to use the mallet from the very outset. We have proofs of fillings which we see in our patients' mouths, that were inserted thirty and thirty-five years ago without the mallet, without the aid of a dental engine, without the use of a rubber dam, and are still serviceable. Of course these fillings are scarce, and yet we meet with them occasionally. I have some fillings under my observation, which were inserted by the late Dr. Riggs, of Hartford, Conn., thirty-five years ago, and some of these are in good condition. This proves the fact that good work has been and can be done without the aid of any mallet whatsoever; but in our different colleges the manipulation of cohesive gold only is taught, and in consequence thereof the mallet is the only instrument used for impacting gold. Had I any influence, I should use it in the direction towards making it obligatory at the colleges to use a hand-mallet only; any one who understands the use of the hand-mallet thoroughly, may, in after practice, become accustomed to almost any mallet he may choose. When the mallet came into use, dentists, as was mentioned before, began to do contour work; but as the preparation of cavities was overlooked and not taken advantage of, failures after failures were reported by operators, who by their skilful manipulation of soft gold, were accustomed to see their fillings remain in teeth for years. Their malleted fillings dropped out in a few months. This, of course, was not the fault of the operators; they had performed their work as skilfully as ever, if not more so. Oh, no! the mallet had done it all, and consequently it was abolished by a great many of the better operators, who, perhaps, by a little more patience could have wrought wonders. But we must not forget that rubber dam had not as yet been introduced, and the dental engine was as yet very primitive and looked at with distrust. At about this time two factions were in existence in the dental profession, one using soft gold-foil, and manipulating the same by hand-pressure; the other using gold in its natural state, and using a mallet. These two factions are in existence to-day, the former is on the decline, whilst the latter is steadily increasing. Having ascertained this most important fact, the question arises in my mind, which, of all the mallets in use, is the best? And a difficult question it is to answer. Very often we are questioned by our patients whom we consider the best dentist? In a certain city this question would be like, "who is the most popular man in the same city?" The one people think most of, and as a rule patronize, is, in their esteem, the best dentist; so it is with the dentist, the mallet he likes best he uses in his daily practice, is without doubt, in his judgment, the superior instrument. Now this should under no circumstance persuade us to condemn every similar instrument used by other operators, who, perhaps, are far superior in their workmanship than we imagine ourselves to be.

Dr. Parmly no doubt was under the impression that better results could be obtained by using the hand mallet than by using any other form, although at his time no other mallets were in existence, save the rudiments of one or two automatic mallets which have since been perfected. Hand mallets were no doubt a great achievement, but simple things lose their value after a certain length of time, and dentists in various parts of the country tried to invent something which would replace the assistant, for without the use of the rubber-dam it was next to impossible to do the malleting without one. I have never been able to locate the birth-place of the first automatic mallet, but it seems the first was invented by Foote, soon after came Taylor's, Hodge's, Salmon's, Snow & Lewis', Baxter's, Pomeroy's, Gaylord's Swartley's, Buckingham's, etc. etc. Of all these numerous automatic mallets so-called, but miscalled, the one most used is the Snow & Lewis mallet. All of these mallets are more or less objectionable, although each one may have some good qualities. The Snow & Lewis mallet may be found in the majority of dental offices, and yet I can not see the advantages of it. This mallet may be a fair instrument for the insertion of gold-fillings in molars and sometimes in bicuspids, but its use in frail incisor teeth seems to my mind barbarous to say the least.

I have heard the remark made by a dentist, who has had teeth filled by the aid of the electric mallet, that the blow therefrom was such a *cold-blooded* one; this in my mind would give a good definition of the blow of the Snow & Lewis mallet, the blow is such a cruel one, there is absolutely no regulating it, the softer you wish to strike the worse the snap seems when the spring flies back. But dentists don't seem to mind this very much; very few of our profession I ma sorry to say pay little attention to the comfort of their patients; filling the teeth is all most dentists think of. The Swartley mallet seems to me a much better one, the principle of it is no doubt far superior to that of the other, but the objection is made that the movement of the mallet is too much like that of a jumping-jack, but what of that since it does the work? The blow can be regulated by the four points inserted in the ball, which make it seem like four different mallets. A mallet which was shown to me by its inventor, is that of Dr. Antes, of Geneseo, Ill. His mallet resembles the electric mallet more than any mallet I have seen, and also the hand mallet. The armature is quite long, twice as long as that of the electric, and it strikes the instrument which presses on the gold direct, on pressing downward. On lifting the instrument a spring pushes the armature back into its former position. This mallet strikes me as being the best one in imitation of the hand mallet. Of late years we have had a number of mallets in the market called pneumatic mallets: this is about the simplest mallet of its kind. It is simply a piece of metal tubing, into which is fitted a piece of solid metal which slides up and down; at the lower end is a socket which holds the automatic mallet points, and at the upper end is a small nipple, to which is attached a small rubber tube, this in turn is connected to a rubber bulb. The operator on stepping upon the bulb exhausts the air from the same and so allows the weight to drop in the tube which acts like a hammer, on releasing the bulb the weight flies back again, and so the patient may do the malleting by pressing the bulb in his or her hand. This is very simple indeed, and the pneumatic mallet may have a larger future before it than it seems to have at present.

When everything else had been in use more or less, the idea struck Dr. Bonwill—then a country dentist—while on a visit to Philadelphia, and passing through the Continental Hotel there, on hearing the click of an electrical apparatus, that electricity might be made useful for the filling of teeth, and he went back to his country home and began experimenting. How far he has been successful we all know or ought to know. His first electric mallet was the most ingenious one ever made; like all new instruments, it was too complicated to be of use to any one; the malleting was done at intervals of a second, each blow regulated by a clock, which could be hung in any part of the room, and at every move of the second hand of the clock, the mallet would strike. This was a mallet with a future before it, was the inventor's idea; accordingly he went to Philadelphia and exhibited it to his friends, and to Dr. Darby in particular. He found encouragement, and went to work to make his mallet simpler less complicated, and the next mallet which he brought to Philadelphia was without any clock-work attached to it, and this is the first mallet which had an automatic interruptor attached to it. This was a great surprise to all who saw it. He again visited his Philadelphia friends, and he was induced to move to that city, where he experimented until he had produced a mallet which he thought was perfect; this it was not however, his mallet was still very large, clumsy, and difficult to handle. The electro-magnetic mallet was discussed at the society meetings; different gentlemen began to work at the same, and finally a mallet was made, as we find them in the market to-day, for which mallet we are indebted to the late Dr. Marshall H. Webb almost as much as to Dr. Bonwill himself, although the latter gentleman may be called the father of the electric mallet. This is the first and only real automatic mallet which we have, although a great many other mallets are called such. This is the only mallet which works without the aid of the operator, save a slight pressure, which is exercised with the index finger about the same as in writing, with a soft steel pen. The electric mallet was taken up by a great many men in different cities, but its use to-day is very limited and we ask the reason why? It is perhaps because most dentists are not willing to take care of a small four-cell Bunsen battery, which will take up fifteen minutes' time, once a week. I think a time will come when the electric mallet will be as popular and as much in use as the hand-mallet is to-day. The blow of this beautiful little instrument is more like that of the hand-mallet than that of any other instrument.

Dr. Bonwill had every reason to be proud of his achievement, and he was; but he pondered until he thought of something better or later at least, so he began to construct a mallet, which was to be worked in connection with the dental engine. He succeeded in finishing his engine mallet, but when he had done so, he treated his first and most ingenious invention as a bad step-father will treat a step-child. The reasons are perhaps good ones, but they are not creditable to Dr. Bonwill. Because he was not alone in perfecting the electric mallet, or because he had no pecuniary interest in the same, this is no reason why he should denounce his own invention, upon which I look, next to the rubber dam, as the greatest invention in dentistry. The electric mallet may possess objections, but surely its advantages are equally as numerous as that of any one instrument. While at a society meeting in the city of Philadelphia I heard a gentleman make the remark: "We do not want electricity in our practice nor in our offices." This is about the poorest argument I have ever heard in denunciation of the electric mallet.

Electricity is the greatest invention of the century, and in the short space of time it has been made useful it has done wonders.

Why, therefore, should we take a back seat among scientific men and say—stop, we do not wish for anything new in our profession, without considering its value. I think this proves a narrowness of mind which we should try to overcome. The engine mallet is no doubt, a very good instrument, but it cannot be stopped instantly, and the electric mallet can; this might be done with the former, were it driven by electricity, the time for which is near at hand. This is one of the greatest advantages the electric mallet possesses, it can be stopped instantaneously and set in motion fully as quickly, the blow is a short, quick one, which is what we desire. The electric mallet may be put to a practical test in the following manner: Glass tubes are to be selected of the same dimensions and strength, which are to be filled with gold by different instruments. In using the electric mallet it will be found, that not only more gold can be impacted into the tubes, but a less number of them will be broken during the process of introduction. Tests of this kind have been made by the late Dr. Marshall H. Webb, and I know that in every instance the electric mallet proved to be superior to other mallets or hand pressure.—*Dental Review.*

CROWN AND BRIDGE-WORK.

By A. G. Bennet, D.D.S., Philadelphia, Pa.

(Read before the Odontological Society of Pensylvania, February 5, 1887.)

Dentistry is the science and art of saving and substituting teeth. Saving teeth by filling has been the chief theme of thought and discussion, and as exercised the highest skill in the profession. But since for various reasons, such as inherent defects, extent of disease, lack of ability on the part of the operator and want of care on the part of the patient, large numbers of teeth are lost, prosthesis becomes, and in fact has always been, an important branch of practice.

Until within a few years dentistry consisted chiefly of fillings and plates, neither of which have always met the requirements in every case. During the last decade there has been rapidly developed what may be properly called a third branch of dentistry, closely related to the preceeding, which has been practiced with varying degrees of success and failure, and has been advocated and opposed with almost all degrees of knowledge and prejudice. This new system, which is, strictly speaking, an old system revived and greatly improved, is called crown and bridge-work, Though resembling prosthetic dentistry more than operative, this mode of restoring lost organs partakes of the nature of both, and begins where filling ends. Filling by restoring lost tissue attempts to save the crown, while crowning may be said incidentally at least to save the root. If it can be shown that this new system of prosthesis has a scientific basis and conforms to correct mechanical principles, time and practice can be depended on to develop skill in the art of construction. Of the few things we know with certainty about dentistry, one of the first is that any mechanism that ignores the facts of science, or does not comply with conditions and meet requirements, must inevitably fail.

Though I think that this new system of substitution has been well named, yet the term bridge-work is associated in many minds with all that is discreditable to the dentist and disgusting to the patient. While not strictly correct in all cases, this new method might not inaptly be termed *continuous crown-work*—a name that perhaps would weaken some of the opposition and prejudice that bridge-work has encountered ; for no one would object to from three to six crowns in one jaw, *provided they were on separate roots.* And yet when a bridge extends across a space *without roots—a condition that favours health in the parts and cleanliness in the work*—objectors protest at once. Much that we hear against bridge-work gives no indication of the would-be "cautious scientific mind" that we read about ; so that when we hear some objec- against this system called "fatal admissions," we have no fear that all our bridges will break down under the weight of baseless criticism, or fail to stand the test of time. The most truly scientific mind, cannot, from the nature of things, give a final decision in advance against any method of substitution that is so closely allied to crown and plate-work. But though the thoughtful may decline to commit themselves for or against this new system, the unthinking will still insist on saying "I don't *believe* in it," or "I think it is all wrong," thereby mixing up the tangible and material with the moral and spiritual.

(*To be continued.*)

Reports of Societies.

ODONTOLOGICAL SOCIETY OF VICTORIA.

THE ordinary monthly meeting of the Odontological Society of Victoria was held on Thursday, May 5th, in Melbourne.

There was a good attendance. The Secretary reported the result of an interview with the Hon. J. Bosisto, in which he expressed his willingness to co-operate with the Society in the passing of a Dental Bill.

Mr. Iliffe presented the models of a case of retarded dentition in a young lady 21 years of age.

Mr. Townsend exhibited a tooth ground down to the end of the root by mastication. Mr. MacGregor also showed an upper lateral tooth, in which the root was curved posteriorly in a semi-circle. Mr. Cumming then introduced the subject of "Judicious filling," on which there followed a discussion, the merits and methods of various fillings.

George Thompson, L.D.S.E.,
May 25th, 1887. Hon. Secretary.

Dental News.

BRITISH DENTAL ASSOCIATION AT BURY ST EDMUND'S.

THE annual meeting of the Eastern Counties' Branch of the British Dental Association was held on Tuesday at Bury St. Edmund's, Mr. H. W. Tracy, of that town, being the president for the coming year. The other members present were Mr. R. W. White (retiring president), Dr. Cunningham (Cambridge), Mr. N. Tracy (Ipswich), Mr. Alexander Kirby

(Bedford), Mr. F. Hall (Hertford), Mr. F. H. White (Norwich), Mr. A. L. Littleboy (Norwich), Mr. G. Dearle (Diss), Mr. S. A. T. Coxon (Wisbech), Mr. H. R. Eyre (Ipswich), Mr. W. A. Rhodes (Cambridge), hon. sec., Mr. B. W. Harcourt (Norwich), and Mr. Paling (Peterborough).

The business meeting of the morning was held in the smoking-room at the Athenæum, the retiring president in the chair. The Secretary then read his report of the year's progress, which was considered satisfactory, the appointment of two dental surgeons at Addenbroke's Hospital, Cambridge, being referred to with special pleasure.

The next meeting was unanimously fixed to be held at Northampton, with Mr. F. Hall (Hertford) as president for the year then ensuing. Mr. Harcourt, Mr. Fenn Cole, and Mr. N. Tracy were the retiring members of the Council, and the first two were appointed with the late treasurer (Mr. John Bridgeman) in the room of Mr. Tracy, who did not wish for re-election.

The Retiring President gave a short valedictory address. He then introduced Mr. H. W. Tracy as the new President, saying no one who knew Mr. Tracy would have any doubt that they would be ably presided over by him.

The President opened the afternoon meeting with an able technical paper, dealing with bridge-work, the electro-gilding of vulcanite plates, and other phases of dental surgery.

This was followed by a long discussion raised by Dr. Cunningham, who moved a resolution in favour of the more general appointment of dental surgeons in hospitals.

Mr. R. W. White opposed the motion with a direct negative. He did not hesitate to say he could, with a little trouble, get a dental surgeon appointed at Norwich Hospital but that would not be done if he could help it. Being himself a surgeon, he could look at the subject with an open mind. His own earliest instruction in extractions was received at that hospital, and the same applied to many good or decent operators in these counties. Young men had opportunities for learning extraction in hospitals under the present system which they would not have if dental surgeons were regularly appointed, beside which it would not be fair, especially in small towns, to dental practitioners generally.

Dr. Cunningham, Mr. Rhodes, and others, held that the poor should have the same opportunities for dental treatment as for general surgical treatment at hospitals.

On a division, Dr. Cunningham's motion was lost by seven votes to six.

Papers were read by Mr. Harcourt and others. The annual dinner followed.

After the dinner the customary loyal toasts were proposed.

Dr. Image proposed "The British Dental Association and its Eastern Counties' Branch."

Mr. R. W. White responded.

Dr. Cunningham proposed the health of the "Medical Profession"—an even wider toast, he said, than that of the "B.D.A.," whose members claimed to rank as specialists within the medical profession, but for the moment, in proposing the toast, he was willing to treat them as distinct. Many young men in the dental profession took their Fellowship of the College of Surgeons, and he hoped some would go further and take the M.B. of London, or perhaps after a short time of Cambridge. Many distinguished ornaments of their Society were members also of the Medical profession, pure and simple. The highest ideal of the dental profession would be, he thought, to be synonymous with the medical profession, but for practical purposes that was not possible. They must be content to uphold their diploma, which was equal as far as its curriculum was concerned, to the medical, in these particulars—in its requirements as to early education, difficulty of further acquirement, time, and expense. He wanted to make the medical profession and the public understand that they had nothing to do with trade in any way. By drawing these distinctions they were doing justice to the public as well as themselves. In Austria, Hungary, and other countries where he spent a recent holiday, he found them particularly anxious in striving after the idea he had mentioned—that every dentist should be a medical man. He liked these dinners, at which medical men came amongst them, and he thought it right to be frank and speak out in their presence, because if they could educate one medical man they would educate a lot of patients. There should be a scientific education common to the general surgeon and the dental student, the latter departing at a certain period to take up his special studies, but remaining on a par with the former. The Dean of the Middlesex Hospital was good enough to say lately that no student would leave that Hospital signed up for the full curriculum, without having passed three months in the practical dental department of the Hospital; and that was due to that point having been taken up by this Branch of the

British Dental Association. (Applause.) He (Dr. Cunningham) read a paper before the parent Society last year, and had been since then in communication with the Director-General of the Army Medical Department, thinking it a crying shame that our soldiers should not have the benefit of as much knowledge as is common to the bulk of our people.—The speaker read an extract from an American Report to how that his ideas were making way in that country, and said that a distinguished official of the British Medical Society told him it was only a question of time, allowing fully qualified dental surgeons to become Associates, if not full members, of the Society. The feelings of good fellowship indulged in at these annual dinners only needed to be carried a l ttle further in practical life. They had great pleasure in meeting some members of the medical profession in Bury St. Edmund's, and he was glad to be able to associate the toast of a great profession with what was locally a great name—the name of Dr. Image. (Applause.) Other toasts followed and the evening closed by a good selection of music.

PASS LIST.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE following candidates were admitted L.D.S. on June 10th :— James F. Rymer, M.R.C.S. ; James Battersby ; Abraham William Frost ; Charles Frederick Newton Petit ; Charles Cecil Robinson ; Robert J. Lovitt ; Alfred Parker Cater ; Percy Allison Linnell ; Thomas George Read ; George Seymour. Three candidates were referred

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following candidates were admitted L.D.S. in April last :—Peter Sydney Spokes, M.R.C.S., London ; Alfred Stevens, L.D.S.I., London ; David Thomson, Edinburgh ; John Gardiner Fraser, Edinburgh.

Examination for the Fellowship in April last :—R. Denison Pedley, L.D.S., M.R.C.S., (Eng.), elected July, 1887).

APPOINTMENTS.

H. G. READ, M.R.C.S., L.R.C.P., L.S.A., L.D.S. (Eng.), has been appointed Dental Surgeon to the Metropolitan Hospital.

Mr. David Watson, L.D.S. (Eng.), has been appointed Dental Surgeon to the London Society for Teaching the Blind, Upper Avenue Road, N.W.

Dr. G. Cunningham, B.A., D.M.D., L.D.S. (Eng.), has been appointed Lecturer on Operative Dental Surgery at the National Dental College, *vice* Dr. St. George Elliott, resigned.

Mr. Gordon Hooper, L.D.S. (Eng.), has been appointed Dental Surgeon to Bethlehem Royal Hospital and King Edward's Schools (Girls' Division).

Mr. E. Lloyd Williams, M.R.C.S., L.R.C.P., L.S.A., L.D.S. (Eng.), has been appointed Assistant Dental Surgeon to the Dental Hospital of London.

Dr. J. F. W. Silk, M.D. (Lond.), &c., and Mr. P. Sidney Spokes, M.R.C.S., L.D.S. (Edin.), have been appointed Anæsthetists to the National Dental Hospital; and Mr. Charles Glassington, M.R.C.S., L.D.S. (Edin.), late Anæsthetist to the same Institution, has been appointed Assistant Dental Surgeon.

OBITUARY.

WE regret to hear of the death of Mr. T. Hall, L.D.S., of Rock Ferry, who died at his residence on June 18th, aged 54. Mr. Hall was Honorary Dental Surgeon to the School Frigate, H.M.S. Conway.

Correspondence.

The Editor does not hold himself in any way responsible for the opinions expressed by correspondents.

To the Editor of the "British Journal of Dental Science."
Sir,

I should feel obliged if any of your correspondents could give me information as to the strength, and mode of preparation, of a solution of Cocaine to be used hypodermically as a local anæsthetic in the extraction of teeth, also as to the quantity of the solution to be injected.

Yours truly,
C. S.

ANSWERS TO CORRESPONDENTS.

Mr. Arthur Hare.—The matter has already been very fully discussed in the pages of a contemporary, and we cannot see that the interests of the profession will be subserved by publishing more on the subject. We want information upon D.D.S. degrees which are good but unregistrable over here.

Mr. Muspratt Hall.—Yes, we do so; your communication is too late for this issue, but if you will send us a brief notice, we will insert it next time.

C. S.—Read Mr. Hern's paper on Cocaine, now being published in our columns. Dr. Cunningham suggests gr. ½. Look out for possible ill effects.

Communications have been received from—

Mr. Arthur Hare, London; Mr. Sebley W. Read, London; Mr. Morton Smale, London; Secretary Dental Hospital of London; Dr. George Cunningham, London; Mr. Christopher Heath, London; Mr. T. S. Muspratt Hall, Rock Ferry; Mr. R. D. Pedley, London; Mr. J. Palethorpe, Birmingham; Mr. Henry J. Moore, Manchester, "C.S."; Mr. George Thomson, Melbourne.

BOOKS AND JOURNALS RECEIVED :—

British Medical Journal, Western Dental Journal, Pharmaceutical Journal, The Dental Register, L'Odontologie, The Dental Cosmos, Independent Practitioner, Items of Interest, Die Zahutechische Reform, Deutsche Monattscrift für, Zahuheil Kunde, The Bury Free Press, The Chemist and Druggist, The Dental Record.

HOSPITAL REPORTS.

Work done at the Victoria Dental Hospital of Manchester, during the month of June, 1887.

Number of Patients attended		749
Extractions	Children under 14	494
	Adults	
	Under Nitrous Oxide	60
Gold Stoppings		24
Other Stoppings		61
Miscellaneous		287
Total		926

Henry J. Moore,
House Surgeon.

MONTHLY STATEMENT of operations performed at the Dental Hospital, Birmingham, from May 1, to 31, 1887.—

Number of Patients attended		1155
Extractions	Children under 14	
	Adults	
	Under Nitrous Oxide	47
Gold Stoppings		7
Other Stoppings		57
Advice and Scaling		139
Irregularities of the Teeth		4
Miscellaneous		118
Total		1526

W. PALTHORPE,
House Surgeon.

Report of the cases treated at the Royal Portsmouth, Portsea, and Gosport Hospital, from April 1 to June 30, 1887.

Teeth Extracted	200
Temporary Filling	1
Advice Cases, Scaling, etc.	51
Irregularities of the Teeth	27
Total	279

W. H. KIRTON, L.D.S., R.C.S., (Ireland.)
Hon. Dental Surgeon.

TO CORRESPONDENTS.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., before the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer, which are no to be published when not desired.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.

3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and also beg to call particular attention to the importance of a carefully-penned signature and address.

4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, 289 & 291, Regent Street, London, W.

5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

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Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 469. LONDON AUGUST 1, 1887 Vol. XXX.

LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

(*continued from page* 660)

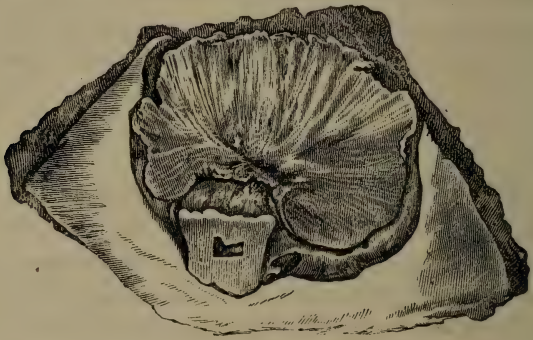
Lecture II.—Tumours of the Jaws.

Mr. President and Gentlemen,—In my last lecture I discussed the cystic affections of the jaws, and referred, among others, to the dentigerous cyst due to a misplaced tooth. It does not, however require the development of a cyst to render a misplaced tooth important, for there are many recorded instances in which mere displacement of a tooth from its normal position has given rise to deformity and the suspicion of grave disease.

Even more remarkable, however, than mere malposition are certain modifications which the molar teeth occasionally undergo during their development, giving rise to most interesting tumours of the jaw, which have been specially studied and described under the name *Odontomes* by Broca. These tumours depend upon some modification of the germ of the tooth before the formation of the cap of dentine, and belong to Broca's second class, *odontomes odonto-plastiques* or *odontomes bulbaires*. The result is the formation of an irregular mass of dental tissues in no way resembling a tooth in shape.

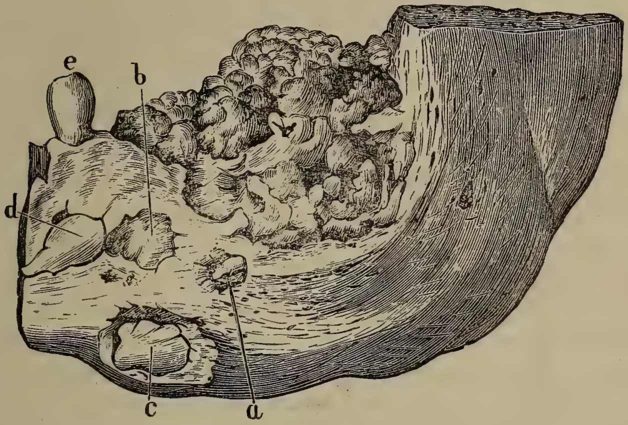
There are, I believe, but nine cases of this form of odontoma recorded, and these all occurred in the lower jaw. The first case was communicated to the Faculty of Medicine of Paris in 1809, by M. Oudet. The patient, a man aged 25, had on the right side of the lower jaw a mass occupying the position of the premolar teeth, which on removal proved to be composed of dentine and enamel. A similar mass on the left side was not removed. The second case occurred some years back, in the practice of Sir William Fergusson, by whom the tumour was removed with a portion of the jaw, and is described by Sir J. Tomes, from whose work a drawing of a section of the tumour is taken (Fig. 1). The second molar of the lower jaw was represented by an irregularly flattened mass, composed of enamel, dentine, and bone, derived from calcification of remnants of the dentine pulp, thrown together without any definite arrangement, by which the wisdom tooth was held down. The dental mass, when removed from its receptacle in the bone, presented no resemblance to a tooth. Little beads of enamel here and there projected from the surface, which was generally rough and irregular. The naked-eye appearance of the section is accurately given in the wood cut, the radiate character in which shows the arrangement of the component tissues, which, by the aid of the microscope, are seen at places to alternate. The alternation is mainly effected by the dentine and bony tissue, and these, indeed form the great bulk of the mass. The appearances presented, prior to the operation, consisted in enlargement of the jaw posterior to the first permanent molar tooth, with a hard, brown-looking body projecting but slightly from the surface of the gum. This projecting portion was, in fact, the upper surface of the aberrant tooth ; and the nodules of enamel were, for the most part, situated in this part of the mass.

Fig. 1.



The third case occurred to Dr. Forget in the person of a young man, aged 20, who presented himself in 1855 with a disease of the lower jaw, from which he had suffered since he was 5 years old. Upon looking into the mouth, a round smooth tumour, hard and unyielding, was seen occupying nearly the whole of the left side of the jaw. None of the teeth beyond the first bicuspid were present. Dr. Forget removed the portion of the jaw involved by sawing through it in front of the bicuspid tooth, and also through the ramus at the level of the inferior dental foramen. The portion removed is seen in the accompanying drawing (Fig. 2). An examination of the portion which had been removed showed that the jaw between the ramus and the first bicuspid tooth was converted into a cavity, which was occupied by a hard oval mass, of the size of an egg, having an uneven surface covered here and there with minute tubercles, which were invested by a layer of enamel, penetrating into the substance of the bone, and easily recognisable by its shining appearance and peculiar colour. A section of the tumour showed that it consisted of a compact tissue of the consistence of ivory, of a greyish-white colour, in the interior of which it was possible to perceive, with the naked eye, a kind of regular arrangement of the elements which entered into its composition. Between the tumour

Fig. 2.



and the osseous cyst was a thick membrane, apparently of a fibro-cellular structure. At the anterior extremity of the base of the tumour was a depression in which the crown of an inverted molar tooth was wedged in between it and the maxilla. This tooth is seen in Fig. 2, *c*, where a portion of bone has been cut away; *a* and *b* mark portions of the tumour projecting through the jaw, and *d* is the second bicuspid tooth lying below the first, *e*.

The microscopic examination of the tumour showed it to be composed principally of dentine, with enamel on the surface and dipping into the crevices, at the bottom of which, as well as in other parts, portions of cementum were found.

The fourth case of the kind was brought under the notice of the Odontological Society of Great Britain, in December, 1862, by the late Mr. W. A. Harrison, F.R.C.S. The specimen closely resembled those already described, and came from the left side of the lower jaw of a lunatic, where it occupied the space between the incisor and molar teeth. It came away spontaneously, leaving a long deep groove, large enough to receive the last joint of the thumb, which soon granulated and contracted.

The fifth case is given in Heider and Wedl's *Atlas zur Pathologie der Zähne*, and closely resembles Sir J. Tomes's case, the second molar tooth of the right side being developed into a large irregular mass, and holding down the wisdom tooth. It was easily removed.

Mr. Annandale has reported a sixth case, occurring in the lower jaw of a young woman, aged 17, who had never had any molar teeth on the left side. A nodulated mass, which somewhat resembled a piece of necrosed bone, projected above the gum, and was firmly fixed. Mr. Annandale dislodged the growth, and removed it through the mouth. It measured an inch and a half by an inch and a quarter, and weighed 300 grains, and on section showed that a cap of enamel, varying in thickness, was arranged over a portion of the irregular surface of the mass. Beneath this, well-formed dentine, forming a considerable thickness, was met with, and still deeper in the substance of the mass, true bone, containing lacunæ, canaliculi, and Haversian canals, was seen to be intermingled in a confused manner with portions of dentine, so as to form the substance called by histologists "osteo-dentine."

The seventh case occurred in the practice of Dr. Goodwillie, of New York, and is mentioned in Agnew's *Surgery*, vol. ii. It appears to have been removed with the angle of the jaw.

An eighth case has been recorded by myself in the *Clinical Society's Transactions*, vol. xv. The mass measured an inch and a quarter antero-posteriorly, an inch transversely, and an inch and a half from above downwards. It weighed 315 grains, and is shown in Figs. 3 and 4.

Fig. 3.

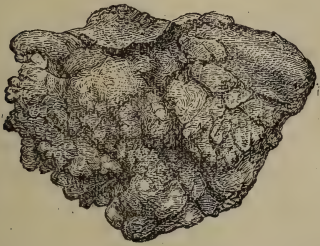
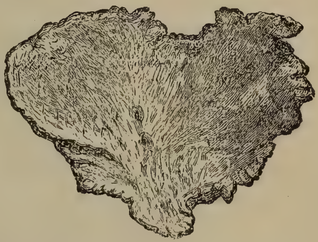


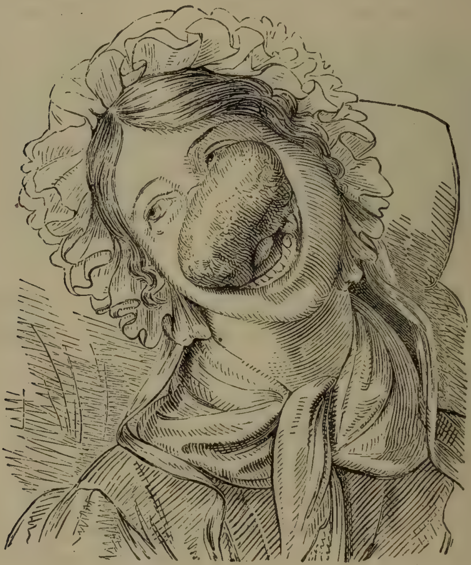
Fig. 4.



Dr. Arkovy, of Buda Pesth, has recently recorded a ninth example, closely resembling the foregoing. All these specimens were met with in young adults, and only the first, fifth, sixth, eighth, and ninth were extracted from the jaw by the surgeon; in Mr. Harrison's case the mass coming away spontaneously, and in Sir John Tomes's and Dr. Forget's cases a considerable portion of the lower jaw being removed by such experienced surgeons as Sir William Fergusson and M. Maisonneuve. In my own case I must confess that I did not appreciate at first the nature of the tumour, and recommended the removal of a portion of the jaw, and it was only during a subsequent operation, undertaken for supposed necrosis, that the true nature of the case became apparent.

A *fibrous epulis*, if allowed to grow to a large size, will produce external deformity of the face, and although attached to the upper jaw, may hang down so as to simulate disease of the lower jaw. This was well seen in a woman aged 27, who who had an epulis of the upper jaw of seven years' growth, which hung down to the level of the angle of the jaw, and who was under the care of Mr. Erichsen, by whom the tumour was removed in 1861, with perfect success. Perhaps the most remarkable case of epuloid growth on record, however, is Mr. Liston's well-known patient Mary Griffiths, from whom, in October 1836, he removed the growth shown in the accompanying drawing, Fig. 5.

Fig. 5.



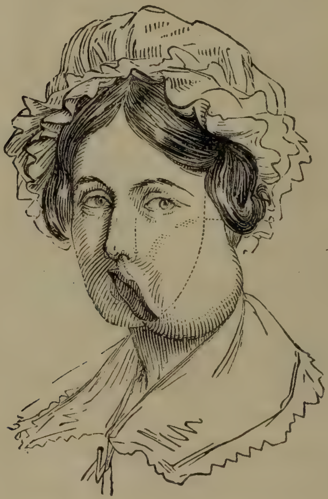
The patient had laboured under the disease for eight years, and had been subjected to a partial removal of the growth when of inconsiderable size. The tumour was of a simple fibrous structure. The growth sprang originally from the gums and sockets of the incisors and canine tooth of the left side ; at an early period it protruded from the mouth, unconfined and uninfluenced by the pressure of the lips or cheek. It had assumed a most formidable size and appearance, concealed the palate and pharynx, and gave rise to great inconvenience and continued suffering. The surface had been broken by ulceration, but upon a close inspection of the projecting part and of that covered by the cheek, it was found to possess a firm consistence, and to present the same peculiar botryoidal arrangement of its parts as the others of a simple and benign nature. The operation proved perfectly successful. The preparation is in the Museum of the College of Surgeons (2193).

A case very similar in many respects to the preceding one was successfully operated upon in 1869 by Professor Kinloch, of Charleston. The patient was a negress aged 25, and presented much the appearance shown in Fig. 5, the mouth being enormously distended by a protruding growth, which appeared to have originated in the alveolus, but to have involved the superior maxilla. Dr. Kinloch removed the whole mass, which weighed nearly two pounds, and the patient made a good recovery.

Fibroma of the lower jaw closely resembles the fibrous tumours of other parts of the body, and especially in connection with the uterus. It is dense in structure but not unfrequently lobulated, and, on section, slender bundles of intersecting fibres may occasionally be traced in it, of which there are good examples in the Museum of the College of Surgeons. The fibrous tumour usually springs from one of two situations, either the interior of the antrum or from some portion of the alveolus. In both cases it is intimately connected with the periosteum, in this respect resembling epulis. Occasionally the growth appears to follow some slight injury, as in the case of a lady, a patient of Dr. Neale, from whom, in 1870, I successfully removed a fibrous tumour occupying the interior of the antrum which had followed a blow given by her child, and which may have been a fibrous odontoma. The fibrous tumour grows slowly, but surely, involving in its progress the surrounding structures. When arising in the antrum, it first expands the walls of that cavity, bulging out the face and forming tumours in the palate and the floor of the orbit, and subsequently produces absorption of the osseous walls, and spreads unchecked in all directions. (See St. George's Hospital Museum, II. 160.)

When it arises from the alveolus, a fibrous tumour may encroach on both the facial and the palatine surfaces of the jaw, crushing in the antrum, although not involving its interior. Of this a good example is seen in a preparation (2238)in the college of Surgeons, of an upper jaw removed by Mr. Liston. Here the tumour, which is affixed to the alveolar border near the molar teeth, extends inwards so as to cover the palatine portion of the jaw, and outwards so as to conceal all the bicuspid and molar teeth, with the exception of the last. The walls of the antrum are pressed inwards, but its interior is healthy. The patient was a woman, thirty years old ; and the tumour was observed four years before its removal, which was successful. On the other hand, fibrous tumours, though commencing in the alveolus, may secondarily involve the antrum when they have attained considerable size, producing complete absorption of the walls, and projecting into the nose and through the palate. Of this a preparation in the College of Surgeons' Museum (2236) of an upper jaw, also removed by Mr. Liston, affords a good example. Here the patient was only 21, and the growth first appeared on the outer side of the gum of the left upper jaw four years before the operation. It was cut off six months after its first appearance, but returned, and eighteen months

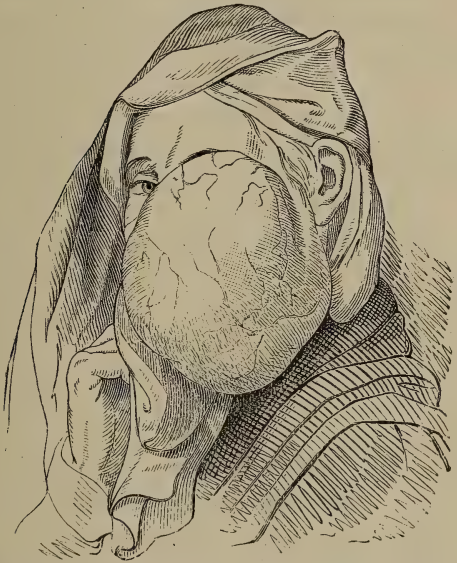
Fig. 6.



after was removed, with a portion of the alveolar process, but reappeared in a few weeks. Fig. 6, from Liston's *Practical Surgery*, shows the patient before the operation. It may be noticed here, as in the case of a large epulis, that disease of the upper jaw often resembles, externally, a tumour of the inferior maxilla.

The enormous size to which fibrous tumours of the upper jaw may grow without destroying the patient is well seen in the accompanying drawing (Fig. 7) of Mr. Liston's celebrated

Fig. 7.



case of Mrs. Frazer, from whom that eminent surgeon successfully removed the growth. The tumour is preserved in the Museum of the College of Surgeons (2241) and in its diameters are, vertically, 7 inches ; transversley 7 inches ; from before backwards, nearly 6 inches. Contrary to the ordinary practice, a portion of the integument was removed with the tumour, measuring 12 inches in length and 10 in breadth, and this left a gap in the skin of the face upon the patient's recovery. A growth of this tumour was connected apparently in a curious way with the the performance of the uterine functions. The patient was 40 years old, and the tumour began to grow six years before its removal in consequence of a blow in the region of the antrum. Its progress at first was slow and not painful, but at the end of two years a distinct tumour was felt in the cheek. During the next two years it grew rapidly, especially during a period of gestation, but still without much pain. In the fifth year of its growth she bore a second child, after which the catamenia ceased to flow, and the tumour was subject to monthly augmentations of its vascularity, and slight hæmorrhages occurred from its inner, though not ulcerated, surface, and from the adjacent parts of the gum.

A remarkable feature, noticed in a case of fibrous tumour of the antrum, in a young, man aged 18, under the care of Sir. J. Paget in 1860, was a distinct pulsation in a portion of the tumour which projected into the orbit. The pulsation was slight but decided, and was synchronous with the radial pulse. The case was clearly not one of malignant disease. but proved to be an ordinary fibrous tumour upon removal, No satisfactory explanation seems possible of the case, which I believe to be unique. Suppuration has occurred in connection with fibrous tumours of the jaw, but only, I believe, when they have been punctured with a view to exploration and diagnosis. Of this the tumour removed from Janet Campbell, and preserved in the Museum of the College of Surgeons (2239) is an example. Simple fibrous tumours occasionally recur after removal, but it is doubtful whether in these cases the whole of the disease has been eradicated. According to O. Weber, they are usually connected with the lining of the Haversian canals of the surrounding bone, and though he believes that these processes may sometimes be effectually detached, he advises the practice ordinarily followed of removing a portionof the bone.

Fibrous tumours of the jaw, like those in other parts of the body, and especially in the uterus, are liable to calcareous degeneration, or, as is sometimes incorrectly stated, to ossific deposit. A good specimen of the kind is preserved in the Museum of St. Thomas's Hospital (I. 18.). A thin section of this tumour has been dried and preserved, in order to show the amount and distribution of the calcareous matter (I. 19).

A remarkable example of calcareous degeneration of a fibrous tumour occurred in the practice of Sir. W. Fergusson, and the preparation is now in the Museum of the College of Surgeons (2242). It is a fibrous tumour of the left upper jaw, of some years' growth from a woman aged 50, containing numerous calcareous particles and acicular crystals, and, in addition, enclosing a suppurating cavity, in which was a mass about an inch in diameter, found by Dr. Goodhart to consist of acidular crystals of mineral matter, entangling in places nucleated and shrivelled cells. This is clearly an example of extreme calcareous degeneration undergoing necrosis.

(*To be continued.*)

A PLEA FOR THE RECORD OF CASES OF NITROUS OXIDE NARCOSIS.

By Dudley Wilmot Buxton, M.D., B.S. Lond., M.R.C.P.

Administrator of Anæsthetics in University College Hospital, the Hospital for Women, Soho Square, and the Dental Hospital of London.

Owing perhaps to the widely spread feeling that "gas-giving" is a safe and reliable way of producing anæsthesia, it has happened that but few clinical observations have been made about nitrous oxide and still fewer carefully worked-out cases published. It is true that a small library of 'papers' has appeared, but most of such productions have been mere paste and scissor works—here a little, there a little, line upon line. In them we recognise the same facts taken out of the books, with a little padding about "I have myself given this gas so many times," or I have seen this or that doctor give "the gas" badly. We have all seen "the gas" given badly, and most of us have on occasion also given it badly, but have maintained a guarded silence about such failures, for it it is more pleasant to give adverse criticism than to receive it. There have been a few cases recorded of abnormal symptoms under nitrous oxide, but these have been scattered abroad in journals and no attempt has been made to systematise such narratives, each observer noticing only such points as struck his attention while ignoring others—an omission which greatly lessened the value of the records.

And again, the cases are seldom put upon paper *at once.* The main features appear so vividly impressed upon the mind that it is believed all matters germaine to the subject will continue fresh for a long while. Such a belief leads to errors in two directions; the observer after talking his case over with his friends, unconsciously incorporates much that is extraneous to the facts if he does not really pervert the facts to meet adverse criticism. To obtain a reliable account of any event, it is imperative that the witness should commit his evidence to writing at once and without any prior rehearsing with friends.

Very many persons would only regard cases as presenting an especial interest which induced alarming symptoms, and so much of great value from the clinical aspect of nitrous oxide administration would be lost. What I should venture to suggest would be, that a 'gas book' be kept. Any ruled note book would answer the purpose and a brief note be made of any case which showed even the slightest bizarre character. Were this done, I am convinced by my personal experience, that after a year or two the aberrant symptoms would become grouped, and further, departures from the normal would force themselves into prominence although at first overlooked.

But it may be said, is this worth while, "what possible gain will arise from such an expenditure of time and energy? It is to answer this question that I propose to address myself.

Nitrous oxide inhalation is, I believe, a very safe inhalation, there is practically no danger when skillfully administered, but I have yet to learn that it may with impunity be given to anyone at anytime and by anyone. In spite of the fact that skilled dentists are constantly giving nitrous oxide gas and operating unassisted, it is generally admitted that for absolute success and safety it is better to have two persons present besides the patient, an operator and administrator. This is important, because it prevents trumped up charges of assault under the gas, and because if the case does not go on as straightforwardly as one would wish, it divides responsibility and gives four hands instead of two wherewith to render assistance. But often such a course is impossible and then it becomes an imperative duty for the dentist who is administering the gas, to recognise even the most trivial sign or symptom of things going wrong. Persons will say they have given gas in their operating rooms thousands of times and have never seen any symptom at all out of the common, and one is bound to believe the statement, while at the same time one can only either congratulate the luck of the individual, or lament his absence of power of observation. As a teacher of anæsthetics I am often struck by the extraordinary faculty some persons have of overlooking changes of expression, of pulse, of respiration and so on, which are of the very last importance to the skilled anæsthetist. Those who accustom themselves to the habit of making exact observations will find that a close scrutiny of their gas cases will be rewarded by many interesting points, the existence of which they never before had realised. The physiological action of nitrous oxide, about which I have especially concerned myself, was elucidated by experiments made upon the lower animals, and it is now of the utmost importance to collaborate the results thus arrived at with the revelations of the clinical study prosecuted upon human beings. To me, then, it becomes a matter of much regret that so few men publish their cases or even render them accessible. It may be worth while to indicate under what headings symptoms should be recorded. The Nervous System. As I have elsewhere shown* the physical condition alike of the brain and the cord undergo very material alteration in animals subjected to the inhalation of nitrous oxide. Now, these physical phenomena must and do possess a counterpart in the symptoms evinced by the patient, and it will be found that a close correspondence can with a little trouble be shown in each individual case. It is true that in most instances the symptoms of nervous origin are few and so familiar as to be passed over almost without thought. Dreams of a grandiose character often forgotten almost before mental control is restored, or brief loss of consciousness preceeded and succeeded by still briefer intervals of hyperæsthesia and tonic and clonic convulsions with conjugate oscillations of the eyes. To these we may now add the less common forms occurring in a small percentage of cases. Some individuals cling to consciousness longer than others, some are tardy in returning to their mental equlibrium. Some, again, evince an exaggerated condition of tonic contraction, taking the form of opisthotonus, emprosthotonus, or pleurosthotonus. In certain persons we meet with a sort of spastic contraction of the limbs which persists for some seconds or even minutes. Transient hemiplegia or transient paraplegia also are conditions which are occasionally met with, while instances of neurasthenia are not very rare. In this place I would also draw attention to the fact that the hallucinations which occur under nitrous oxide may persist with singular vividness for some while after the return of consciousness. In this way we are able to explain the unreasonable pertinacity with which persons cling to statements which are based upon subjective impressions determined by the gas. Brief attacks of loss of power in groups of muscles sometimes occur and even temporary aphonia.

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* Transactions of the Odontological Society, March, 1886.

Passing from the nervous, I will next consider the circulatory system. As a rule the heart's action is favourably affected by nitrous oxide, at all events when the respired air is allowed to escape through an outlet valve, no supplemental bag being employed. In the same way the pulse is not prejudicially affected by nitrous oxide. In a series of sphygmographic tracings I have published,* I have contrasted the normal pulse with that under nitrous gas. A little care, patience and study will enable the observer to make trustworthy observations relying only upon tactile sense. Whilst upon the subject of sphygmographic tracings, I should like to draw attention to a serious fallacy which underlies some recently executed observations on this point. The fear of an impending operation alters both the rate and rhythm of the pulse so that only qualitative changes and not absolute variations are discernable under these conditions. Here also it must be noted, that syncopal attacks occurring in the first stage of nitrous oxide administration or when the patient is emerging from narcosis are by no means always due to the gas. They may arise from fear or shock. Under the present heading should be classed cases of unusual cyanosis, pigmentation of the urine, *etc.*

The Respiratory system may also under nitrous oxide present departures from its usual even behaviour. The movements vary much in their amplitude and rhythm, and in some persons—more especially children, may cease entirely. Tonic contraction of the chest muscles may also occur, giving rise to temporary asphyxia.

It is hardly ever possible for dentists to prosecute researches into the visceral functions of the abdomen, nor are these as a rule interfered with by nitrous oxide.

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* Transactions of Odontological Society, March. 1885.

I hope in the present paper, I have sketched in outline, the main directions into which observers should look for symptoms. I would add that it is advisable to notice the name, the age, the temperament—phlegmatic, sanguine *et cet* the sex and the date of the administration, together with the nature of the operation performed. When possible, the individual in whom abnormal symptoms are elicited under the nitrous oxide, should be made the subject of future observation to determine whether or not the symptoms are the result of a temporary condition, or are the indication of a peculiar constitutional development.

In conclusion, I wish to say that anyone who will favour me with *bona-fide* and personally authenticated cases of vagaries under nitrous oxide will confer upon me a very great favour.

COCAINE AND ITS USE AS A LOCAL ANÆSTHETIC IN DENTAL SURGERY.

By William Hern, M.R.C.S. & L.D.S. Eng.

Assistant Dental Surgeon to the Dental and Middlesex Hospitals.

(*Continued from page* 666.)

Mr. Eber Caudwell,* of Westminster Hospital, in experimenting on himself with cocaine hydrochlorate taken by the mouth, records the effects as follows:—

½ grain produced some drowsiness.

1 grain produced sleep, followed by persistent insomnia.

2½ grains produced frontal headache, great mental excitement, and marked insomnia.

3 grains taken at 7 P.M., after abstaining from food for twenty-four hours, produced decided sleepiness and slight vertigo, which soon passed off, and he was fresh and well in an hour.

5 grains taken at 10.30 A.M. next day produced in a few minutes such giddiness that he could hardly stand. He felt unable to make any exertion, and suffered from supra-orbital headache, together with a sensation of weight and sinking at pit of stomach. The pulse, usually about 80, rose to 94. The temperature, taken four times, rose from 96·7 to 98·6. Pupils were widely dilated, and he could hardly see.

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* *B. M. J.*, January, 1885.

The unpleasant symptoms passed off in two hours, and he was able to walk to the hospital (four miles) in fifty minutes, at 1 P.M., when he remarks "felt quite myself again, and as vigorous as ever."

Mr. Caudwell concludes that cocaine—

(1) Exerts a double action on the brain: in small doses acting as a cerebral sedative; in large doses acting as a cerebral stimulant.

(2) That unless given in large doses in possesses no toxic action.

I gather from the aforegoing and other experiments with cocaine the following summary of the physiological action:—

On heart—

In small doses, powerful stimulant.
In medium doses, stimulation followed by depression.
In large doses, produces diastolic arrest of the heart.

On Blood vessels—

In small or large doses it produces at first constriction of the blood-pressure, succeeded by a considerable fall.

On Nervous System—

Small doses increase the reflex irritability of the cord.
Large doses reduce it considerably.

On Nerves, it appears to have the opposite effect of curare.

Small doses heighten the irritability of the sensory fibres, but exert no effect on the motor fibres.

Large doses completely paralyse sensory filaments and greatly diminish the irritability of motor.

On Respiration—

Moderate doses first increase and afterwards decrease the respiratory movements.

Large doses produce death from paralysis of respiration.

On Voluntary Muscles—

Small doses have little or no effect on their excitability.

Large doses diminish their contractility very decidedly, so that muscular excitability is soon exhausted.

On Temperature—

Slightly raised.

The following results of adminstration of large doses are interesting:—

Mr. Eber Caudwell (before mentioned) took by mouth 8 grains within twenty-four hours without serious results.[*]

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[*] *B. M. J.*, January 1885.

A correspondent to the *British and Colonial Druggist*, February, 1885, took 32 grains within three hours, succeeded by toxic effects which disappeared in twenty-four hours.

An apothecary[*] attempted suicide by taking 23 grains, and recovered without any bad effect being produced.

Lancet, November, 1886, records case of a patient, the subject of morphinism, who took 23 grains hypodermically in one day.

Professor Dieulafoy[†] employed 48 grains, with success, as rectal injection.

On the other hand, Professor Kolomnin,[‡] of St. Petersburg, had a fatal result of poisoning in a young woman, with 20 grains used as a rectal injection, and he is reported to have committed suicide in consequence.

B.J.D.S., May, 1886, records a case from *Dental Register*, reported by Professor Doremus to New York Medico-Legal Society, of death from cocaine applied to relieve pain from decayed tooth; no dose mentioned.

The *B.J.D.S.* for April 15, 1887, reports, from the *Western Dental Journal* another fatal case of poisoning by cocaine; but the relation between cause and effect seems to me so problematical that I hesitate to accept the conclusion.

As antidotes to the toxic effects of cocaine, the following drugs have been suggested:—Nitrite of amyl (3 minim capsules), nitroglycerine, bromide of potassium, &c. Coffee has also been recommended.

In the therapeutical action, with which I am more particularly dealing to-night, cocaine has brought forth some widely divergent opinions, and shown very varied results.

In considering this want of concord in the opinions expressed, and want of uniformity in the results obtained, it would be well to bear in mind the following points, as they may perhaps assist in harmonising some of the opinions and results which follow:—

I. The sensitiveness of the drug to chemical and physical reagents.

II. The varying degrees of action of the several preparations of the drug when applied to the same part, due to differing solubilities, menstrua, &c.

III. The difference of result to be expected from the same preparation when differently applied therapeutically, &c.

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[*] *Varges Zeitchr* [†] *B. M. J.*, November, 1886. [‡] Ibid.

(*a*) Whether used locally.
(*b*) Taken internally.
(*c*) Taken hypodermically.

IV. The difference in time taken to produce anæsthetic effects according to the kind of therapeutical application, and the vascularity or non-vascularity of the tissue to which it is applied.

V. The varying degrees of susceptibility of different persons to the drug.

VI. The difficulty of eliminating errors in its use—*e.g.*, the liability to construe sequelæ as results, and to conclude that what is *post* is necessarily *propter*.

As a topical application for the production of local anæsthesia, in spite of the transient numbing action on the tongue pointed out by Dr. Niemann in 1860, and its action as a paralyser of the peripheral sensory nerves observed by Dr. Hughes Bennett in 1873, and Von Anrep in 1880, cocaine remained, as far as any practical use was made of its peculiar properties, obscure and unfruitful until 1884, when Herr Koller, of Vienna, again brought the drug out of oblivion by advocating it as a local obtundent to the cornea and conjunctiva. Since then it has been very extensively used in ophthalmic practice, and has also been found to have a very pronounced anæsthetic action on mucus membranes having been applied with varying degrees of success to nearly all the mucous tracts of the body.

Its action when applied to the skin is feeble and passing. As a surface application to the mucous membrane of the mouth, it has been used in solutions varing in strength from 2 per cent. to 50 per cent. or higher ; the anæsthesia produced is a transient and superficial one, although dependent somewhat on the salt used, the strength of the solution, and the frequency of the application.

The hydrochlorate is recognised as one of the most powerful salts of cocaine as a topical agent to mucous membrane, its action being much more pronounced than that of pure alkaloid. The most useful solutions are the 5 per cent., 10 per cent., 20 per cent., and 50 per cent. strengths.

In using cocaine as a surface application to the mucous membrane of the mouth, it must be borne in mind that the saliva may act as an effective obstacle to its full action, first by the washing away of the agent, and secondly by the interposition of a viscid layer of mucus between the drug and the end organs of the nerves.

I can do little more than enumerate some of the conditions and operations for which the surface application is useful, for many of which it has been recommended and used by various operators from time to time:—

The adjustment of clamps and separators.
,, introduction of wedges.
,, application of ligatures for the rubber.
,, manipulation of deep cervical edges of cavities, whether for excavating, filling, trimming or polishing.
,, removal of tartar in *Pyorrhœa Alveolaris*.
,, modelling of sensitive and irritable mucous membranes.
,, lancing and excising gum tissue.
,, opening of superficial abscesses and cysts.
,, relief of pain after extraction.
,, anæsthetising pulps before extirpation.
,, obtunding sensitive dentine.

And many other superficial operations on the oral mucous surfaces.

For some of the above operations I have found the drug to be a valuable obtunding agent. In a recent case of extremely irritable mucous membrane, where I wished to get models of a mouth in which half the maxilla had been removed by operation, I was enabled, after painting the surface with a little 10 per cent. solution, to get impressions without any difficulty, whereas I had before failed several times owing to the severe nausea and retching produced by the contact of the tray, &c. From the results in this case I think cocaine will be found to be a most valuable agent for procuring models for obturators, &c., where it would be impossible to get them without such an agent. A spray of 2 per cent. or 4 per cent. would also act well for this purpose.

For the relief of pain after extraction it cannot be relied on ; recorded trials agree that weak solutions, as 2 per cent. and 4 per cent., are of no service, although better results have attended the use of stronger solutions. The obtunding effect, however, is so transient that its employment for this purpose is unsatisfactory, and the same may be said for the relief of odontalgia.

As an obtundent to sensitive dental dentine, experimenters do not agree as to results obtained.

Among the preparations suggested and used for the purpose are the following:—

The hydrochlorate in aqueous and spirituous solutions.
The citrate in paste and solution.
The oleate.
The pure alkaloid in paste, or essenting oils, as oil of cloves, cajeput, or eugenol.

Dr. Morgan Howe,* in experimenting with 2 per cent. solutions for the relief of sensitive dentine, found that it manifested some anæsthetic effect, but gave no satisfactory results.

Dr. C. F. Ives † says: "Successes and failures about equal," most effective in teeth above mediocrity in quality and patients over twelve. In young patients with soft white teeth "no successes whatever." 4 per cent. and 10 per cent. no more certain than weaker solutions.

Mr. Boyd Wallis‡ records results of trial of cocaine in seven cases with 25 per cent. and 50 per cent. solutions in spirit of wine and eugenol; three of which were for sensitive dentine, and resulted as follows:—

In one, practically useless.
In second, excavation completed with trifling pain, after second application of cocaine.
In third, operation successful, without pain.

He found it had little or no effect on hard dense teeth, but was more effective on soft white teeth.

Dr. Woodward, of New York, gives results of seven or eight cases, thus:—

In one case, slight difference.
In all the rest had no effect.

Dr. Hillischer,* of Vienna, found that a 2 per cent. solution applied on cotton wool obtunds sensitive dentine in one or two minutes.

Dr. Raymond,† in many experiments with carefully dried cavities and rubber dam applied, using 10 per cent. aqueous solution to the cavity four times, from three to six minutes each, reports all failures with but a single exception; thirty trials with thirty patients without any apparent diminution of pain.

Trials with citrate of cocaine paste, suggested, I think, by Mr. Brunton, of Leeds.

Dr. Miller,‡ of Berlin, reports it—

Slow and inconstant action.

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* *Cosmos*, December, 1884. † *Ibid.* ‡ *Dental Record*, January, 1885.

* *B.D.J.S.* 1885. † *Cosmos*, April, 1885 ‡ *B.D.A.*, August, 1885.

In some cases caused considerable pain.

Sometimes no effect whatever.

He says its effects appear to be more superficial upon hard dense teeth than upon soft porous ones.

Mr. Spence Bate*—Ten cases of trial, nearly all young, seven out of ten females :—

In four cases results markedly successful.

In five cases pain decidedly reduced, but not removed.

In two cases relief was given after two to three minutes.

In others the drug was applied from seven to eight minutes.

"Cocaine dissolved in oil of cloves less satisfactory."

Mr. E. A. Cormack,† of Edinburgh (with citrate of Cocaine paste), reports : "used with entire success, only one failure through position and moisture. With rubber dam and mastic plug uniformly successful. Greatest success in teeth of nervous, excitable people, where there is rapidly progressing caries." Time given, 10 or 15 minutes to 25 or 30.

My own experiments with the hydrochlorate in saturated and weaker aqueous solutions were unsatisfactory ; no appreciable results were observed after twenty minutes' application. A saturated solution in absolute alcohol answered better in some cases. The latter occasionally gave some pain at first, but reduced sensation appreciably afterwards. Carbolic acid gave better results in some cases tested.

I therefore conclude that as an agent for the reduction of sensibility of dentine, cocaine, in whatever manner applied, is unreliable in result and inconstant in action ; the results obtained being no better than those produced by many other agents used for this purpose. The nonvascularity of the tissue possibly explains this.

As an anæsthetic agent to exposed pulps, the testimony borne is again somewhat conflicting.

Dr. Woodward‡ found, after an application of 2 per cent. solution four times in one hour to an exposed pulp, it remained as sensitive as at first.

Dr. N. J. Hepburn* found that after dropping a 4 per cent. solution of hydrochlorate on an exposed pulp, and waiting a few minutes, he was able to remove the pulp without pain being felt by the patient.

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* *B.D.A.*, April, 1885. † *B.D.A.*, November, 1885.

‡ *Cosmos*, 1884. * *Ind. Pract.*, 1885.

Dr. Ives[*] reports no success in removing living pulps with 20 per cent. solutions of hydrochlorate.

Mr. Arthur Underwood[†] at the Odontological Society, February, 1885, found, after applying a 20 per cent. aqueous solution of hydrochlorate for five minutes to an exposed pulp, it had produced scarcely as much effect as carbolic acid.

Dr. G. W. Weld, New York,[‡] found that an exposed nerve could be partially extirpated with no pain to patient by using solution of cocaine hydrochlorate in menthol (gr. vj. to ℥j.)

Mr. C. E. Truman,[*] in experimenting with cocaine at St. Thomas's Hospital, and using 25 per cent. solution of hydrochlorate in spirit, removed pulp of a lower molar for a boy æt. eleven, with the engine, and without much pain being complained of, the patient only wincing now and then.

Mr. Boyd Wallis[†] found, after treating exposed pulp in a molar with the paste of cocaine and eugenol twice, with interval of ten minutes, he was able to remove the pulp without any more pain than occurs after arsenious acid.

Dr. Raymond,[‡] after applying 8 per cent. solution to an exposed nerve in an upper molar twice, and then injecting 2 minims into the palatine root canal, was enabled to remove the pulp entirely with very slight pain. The injection of the pulp by means of a small needle syringe has been suggested, but appears to me not a feasible operation, since less painful methods of procedure are already in daily practice.

I have found aqueous solutions of hydrochlorate of cocaine, as well as the pure crystals, of no service for reducing the sensibility of exposed pulps, but was enabled to extirpate the pulp of a lateral incisor in a nervous lady with scarcely any pain, after treating it several times with a saturated alcoholic solution of the hydrochlorate. I have also found the stronger alcoholic solutions of some service when freely exposing pulps before applying arsenious acid.

These results lead me to the conclusion that hydrochlorate of cocaine in low percentages of aqueous solution is powerless to anæsthetise the dental pulps, but with strong alcoholic solution of hydrochlorate, as well as with the pure alkaloid dissolved in eugenol, &c., greater success may be expected.

Before leaving the consideration of topical applications of this drug, I think it proper to mention a few cases, gathered from the medical journals, where certain constitutional symptoms are laid to the charge of cocaine as a local application, some of which, however, might in my opinion, be referred to other causes.

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[*] *Cos.*, 1884. [†] "Odont. Trans.," 1885. [‡] *B.M.J.*, January, 1885.

[*] St. Thos.'s Hosp. Report, vol. xv. [†] *Dent. Record*, 1885.

[‡] *Cos.*, 1885.

Dr. Ziem,[*] of Dantzic, records the following results of applying 2 minims of a 4 per cent. to the conjunctivæ of a man aged forty. In a view minutes the pupils dilated, face became pale, breathing embarrassed, sweat on forehead, and patient was unable to go home for a quarter of an hour.

Dr. Ziem says 17 cases are recorded in ophthalmic practice in which toxic symptoms occurred ; in 14 of these the solution was dropped into the conjunctival sac.

In 8 of these cases 4 per cent, was used.
" 4 " " 2·5 " "
" 4 " " 2 " "

And the quantity varied from 2 to 4 minims.

(To be continued)

ANTI-SIALOGOGUES IN DENTAL PRACTICE.†

By F. Lonnon.

Mr. President and Gentlemen,

The practice of dental surgery contains so many difficulties, that the introduction to you of any means by which one of those difficulties may be obviated or lessened, will, I am sure, be a sufficient apology for the dry and uninteresting nature of the subject to which I invite your attention this evening.

The subject we are about to consider is : "How to obtain a dry condition of the mouth by means of drugs, during the performance of some dental operations,"

As a general rule the rubber dam answers every purpose, but some patients object to it, and others (as I have myself experienced) become nauseated whenever we attempt to place it in position ; for young children also, and for some operations, such as pivoting, and the plugging of stumps with gold, the rubber cannot be used.

Under these circumstances, it occurred to me that a few experiments into the action of some drugs having the effect of temporarily arresting the secretion might be useful.

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[*] *B.M.J.*, November, 1885.

† A paper read before the Student's of Society Dental Hospital of London.

Such drugs are known as anti-sialics, and as they act chiefly upon the nervous system, I will ask you to consider the nervous influences which regulate the secretion.

The submaxillary gland having been chiefly studied, we will consider that stimulation of the afferent nerves, viz., the Gustatory and Glosso-Pharyngeal, during the performance of dental operations carries impulses to the salivary centre in the medulla, and are thence reflected chiefly by means of the chorda tympani and sympathetic to the gland.

Subsidiary centres also exist as ganglionic masses in the gland structure itself. The chorda tympani contains two sets of fibres, vaso dilator to the gland vessels, and secretory to the cells, and I will ask you to remember that these secrete a thin watery saliva.

The sympathetic fibres contain vaso dilating fibres to the vessels, and secretory to the cells, these secreting a thick vicid saliva.

The *Anti-sialics* may be divided into two classes, viz. :—

Local and Specific.

The local are alkaline, such as the salts of Sodium, Potassium, and Magnesium. These probably act directly upon the gland protoplasm, arresting the secretion in accordance with the law that alkalies arrest alkaline secretions. To these I would add the bromides of ammonium and potassium, which by depressing the afferent sensory nerve endings, act as indirect local anti-sialics, preventing a reflex secretion.

From the preparations of magnesium I did not perceive any diminution of secretion. The salts of sodium, using the bicarbonate in solution (ʒ*i* to ℥*i*), and retaining in the mouth for from one to two minutes, the secretion seemed to be arrested for about fifteen minutes.

Potassium (using the bicarbonate) 30 grs. to ℥*i*, this drug appeared to be absorbed almost immediately, but its effect quicker than sodium.

I next combined the bicarbonate and bromide of potassium about 15 grs. each to ℥*i*, and this combination seemed to answer for short operations lasting a few minutes. The bromides in strong solution were formerly used, before the introduction of cocaine, to reduce the sensibility of the mouth and pharynx for operations about this part, and I have used the bromide of ammonium for this purpose, apparently with advantage.

We will next consider the Specific Antisialics. These are all powerful vegetable alkaloids, and require to be used with caution.

They are Hyoscyamine,
Daturine,
Atropine,
Morphine.
These act by paralysing the secretory fibres of the chorda-tympani.

Of these, Hyoscyamine and Daturine, I have not experimented with, since they behave precisely as Atropine.

Morphine. There are several objections to the use of this drug. These are age—children are particularly susceptible to its influence.

Idiosyncrasy. Certain persons suffer from a species of shock after its administration.

Disease. In certain forms of heart and respiratory disease it would be dangerous to administer it.

And I think these objections are sufficiently strong to deter us from using it.

This drug acts by paralysing secretory fibres of the chorda tympani, leaving the thick sympathetic saliva still to be secreted.

Having decided that the only drug left to us, the physiological action of which is sufficiently well known, to be atropia, our next consideration is, "how shall we apply it so as to obtain the local effect we desire, with the least constitutional ones."

Remembering that the alkaline carbonates, especially of potassium, have an almost immediate action, while atropia requires time to be absorbed. I prepared an alkaline solution containing one per cent. of sulphate of atropia, and at first tried external application, rubbing the solution in, over the parotid and submaxillary regions, but although the atropia is absorbed, it requires so long a time to do so, that I soon abandoned this plan, although I prepared solutions in alcohol and chloroform.

My next plan was to paint, within the mouth, under the tongue and over the region of Stenson's duct, a quantity of solution equivalent to 1-60th of a grain of sulphate of atropia.

The next plan was to dissolve 1-60th grain in two ounces of water and direct the patient to retain in the mouth for about one minute.

Both of these plans yielded good results, the effect being observable almost at once.

The advantages of the drug are :—

Age. Children take it well. Ringer says children may take, not only without injury, but with benefit, much larger doses than adults ; and whilst I have seen a woman display well marked symptoms after a few 10 minims doses of tincture, I have often prescribed 20 minims to a child of two years without anything of the kind.

It may be pleaded that this drug is a powerful poison, then I reply, so is cocaine often used in the mouth, and while the action of atropia is well known, that of cocaine is not.

In conclusion, I will give you two cases in which I administered this drug.

Case 1. A lady, age 27, the operation was to drill out the fangs of a first lower molar ; the rubber made her sick, although I attempted to place it on at three separate visits.

1-60th of a grain was administered as a mouth wash with bicarbonate of potassium, the patient to retain in the mouth for one minute.

Although this patient secreted a large quantity of saliva on former occasions, after the use of the drug the mouth became quite dry.

After the operation, I instructed the patient to make use of acidulated drinks, and she informed me that, although the mouth was rather dry for the remainder of the day, it was not uncomfortably so.

My second case was a child eight years of age ; the operation an osteo filling in a six-year-old lower molar.

In this case I painted a quantity representing 1-120th of a grain under the tongue and over the region of Stenson's duct, and the same marked decrease in the quantity of saliva was apparent.

I afterwards instructed acidulated drinks as before.

From these cases I think you will see that atropia can be used to produce the special effect we require with very little constitutional effects.

I should think that by means of hypodermic injection either into the ducts or beneath the mucous membrane of the mouth, much smaller doses of these drugs may produce the same effects.

In case the dryness persists to an uncomfortable extent after the completion of the operation, I recommend the administration of small doses of pilocarpine, probably about three doses may be sufficient.

Finally, gentlemen, I have not succeeded in discovering any wonderful new drug, but have simply opened a subject which I firmly believe is capable of being made useful.

British Journal of Dental Science.

LONDON, AUGUST 1, 1887.

PROFITABLE HOLIDAYS.

The problem of inventing a machine capable of producing perpetual motion has still to be solved—even that complex mechanism called 'man,' capable as it is of working day by day, and even night by night as the weary hours speed on learns sooner or later that rest is necessary, that fuel must be found, that repairs must be executed—the dream of the Rosicrucians, the phantasmal longing of the Alchemist have only taught their more reasoning children that man's daily output of work is at the best a drop in the ocean of possible science, a pigmy effort in the direction of a summation of knowledge. Man cannot maintain work under the high pressure to which he is subjected in the 19th century without a marked depreciation in the quality of his production as well as a baneful influence upon his nervous vitality. The doctrine of conservation of energy holds good in vital as it does in molar physics. If you put forth so much brain energy in one direction you actually devitalise yourself to a corresponding extent, and unless you take measures to recuperate, you will inevitably exhaust energy and even vitality.

The traditional measure of effecting this building up of nerve tissue, is taking a summer holiday. There is a superstition about this summer holiday-making that needs combating. A man after a hard season's work, will, with a view of preparing himself for another, undertake a month of physical exertion which would pale the tawny cheek of a life-guardsman or stir to active opposition the stolid agricultural labourer.

Another man with the same intent will emigrate with his wife and family to the sea-board, there to inhabit squalid rooms and breath in the pestilential exhalations from cesspools, while he assimilates typhoid and diptheritic germs in his table water. Each man to his taste, is an old and pregnant saying, but most men fail to realise what they are doing when they rush headlong into such foolish efforts at holiday making. They follow a craze as sheep do a bell wether. At one time the world is a gog to go in a canoe in every possible and impossible strip of water, at another the tricycle or even balloon ousts the canoe.

"Record beating" becomes a sine qua non for cyclists and the healthy and reasonable exercise on wheels is converted into a training school for aneurism and diseased hearts. Useless people as a rule, take things quietly, they neither work hard nor play hard, hence they survive to a decrepit old age in spite of the well-wishes of younger and more energetic natures thirsting for their places of honour and emolument These energetic spirits would fain use up every scrap of their bodily energy in their struggle for intellectual pre-eminence and when jaded and tired, they turn to their holiday, they must needs tax their muscles and their heart as they had previously tried their brains. Like the intellectual lady who sought relaxation in hard hoeing of the succulent potatoe they will end in a general paralysis, and the mildly useless but tranquil being will survive and by sheer force of longevity, to claim the prizes a profession gives to "him who waits."

But now, how may a man take his holiday and find profit,—he must learn moderation, and that what is most needed is change of occupation rather than a complete reversal of the individual's habits. It is as preposterous for the intellectual man to seek relaxation in mere muscular activity as it would be for the clod-hopper to pass his leisure in the precincts of the British Museum Reading Room. Most valuable as is muscular exercise it should be indulged in, in strict moderation, and only pushed to the limit of incipient fatigue and some corresponding bracing of the mind should be aimed at by the pursuit of some new path of science; to him who takes his holiday amidst the dwellings of men, archæology, the study of folk lore, of strange habits and customs and local industries afford scope for useful and profitable mental exercise. In rural districts, amidst mountains and fens, many voiced nature has countless tales to tell to the field geologist, the inquirer into strange things, animal and vegetable. Perhaps the most perfect holiday a man can take is one which enables him to leave behind him all the familiar faces of his daily life and emerging from the accustomed sights and sounds to seek recreation in a strange land, whose inhabitants do not regard an Englishman as a direct descendant from the gods nor see in him the peerless exponent of perfection in human affairs. It is undoubtedly very wholesome to be thought little of and to have the opinion expressed with frankness and vigour. It is also salutary to find non-British views on the world in general, are not all moonshine, while English prowess, great as it is, needs more than bluster to maintain its reputation throughout the ever widening circles of the intellectual life of the Continent. We are not sure that professional meetings are profitable when taken out of holiday times, but we have no shadow of doubt that those who attend them are doing their profession a great service and further, that they may if they manage properly, derive benefit both in mind and body from their attendance on such occasions.

THE LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.—The 21st of July, 1887, will long be remembered by "present" and "past" men of the school as the occasion of one of the pleasantest gatherings of the season. The genial Chairman, Professor Marshall, must always win the goodwill and confidence of those with whom he is brought in contact, alike by his affability and knack of always saying the right thing at the right moment. The most noticeable feature of the prize distribution was the brilliant success of Mr. J. Harry Badcock, who carried off five "events," being Saunders' Scholar, Ash Prizeman, and taking the first prize in Metallurgy, Dental Surgery, and Dental Anatomy. Mr. George Seymour, another promising man, took the only other prizes which Mr. Badcock had left accessible, viz., the

Operating and prize for Mechanical Dentistry. The absence of Mr. Samuel Cartwright was commented upon and deplored, but the success of the evening was still assured. The music and admirable sketches by Mr. Eric Lewis were first-rate.

NEURALGIA CURES.—The familiar distich, "Sassafras, Sassafras, where do you go? Into Decoctum Sarœe Co," will have to be modified, as it is suggested that Sassafras oil should now go where neuralgia is and drive it away.

ALUMINIUM SOLDER.—Twenty parts of aluminium, 80 parts zinc. Melt the aluminum then add the zinc with a little fat; stir this with an iron rod, and pour in moulds. Another formula is aluminum 90, tin 10 parts.

PRACTICAL HINTS.—A correspondent of the *Western Dental Journal* gives the following:—

TO UTILISE WORN-OUT BURRS.—Small cherry burrs, ground flat on two sides, make nice drills for retaining points; large ones makes a Forbes drill, while the inverted cone makes the Spade drill, very useful in removing loose filling.

TO USE THE RUBBER DAM WITHOUT LIGATURES, apply it to at least two teeth on each side of the tooth to be operated on. After putting on the dam, by a slight pull up or toward the crown of the tooth invert the dam around the teeth; then with a thin Cushing scaler work the dam well under the free margin of the gum; then varnish around each tooth with Sandarach varnish, and place a small pledget of cotton between all the teeth except those to be operated upon; this lessens much of the pain in the operation, as much as is caused by the ligatures. It is useful to keep a number of shoe eyelets with the holes closed with soft solder, and if by accident the dam becomes punctured during an operation, pass one of the eyelets into the puncture and stop the leak.

TO REPLACE A TOOTH OR BLOCK ON A RUBBER PLATE, file away the plate as much as necessary, cutting in a retentive shape ; then with rubber warmed until very plastic (tooth also warm) cement the tooth to its place on the plate with the warmed rubber, invest in one investment, and vulcanise. It is not necessary to wax up and separate your flask, as is usually done. In finishing approximal fillings, soap a silk ligature and pass between the teeth.

An Antiseptic Collodion.—Mastic in globules, 3 parts, balsam of Peru, 1 part, narcotine, 1 part. Each ingredient should be ground separately, and 5 parts of chloroform added thereto. This collodion is said to be efficacious in the treatment of neuralgia, the joint pains of rheumatism.

To the Inferno at the Dentist's.—"I have read some remarks in your paper of late," writes a correspondent, "on the subject of the application of anæsthetics, and perhaps to those who, like myself (until a few days ago), have never had gas administered to them, but have always thought that it would one day be necessary, a short account of my experience under the influence of it may not be without interest. The fangs of a double tooth had to be extracted, and the dentist advising the administration of gas, I consented. The gas was perhaps badly administered ; anyhow I seemed to come to in the middle of the performance of the extraction. But I had quite a long dream apparently before coming to—although my dream, I imagine, cannot have occupied a real space of more than two minutes. I am a very coward at this sort of thing, and the operator's grunt and short remark, 'a nasty job,' gave me little encouragement. However, I stuck tight to the chair, and thought of De Quincey's opium experiences. A dip now—but where ? Hades or Heaven ? I became conscious of a sudden pressure —quiet but irresistible—dragging me downwards—through water, and in company with thousands of men and women, dead or dying. We all seemed to be going down in semi-darkness, and no sound save the sigh of a dying breeze seemed present. In this descent I began to reflect upon the apparent purposelessness of life, when, with a sudden scream, my nearest descending neighbour (sex unknown) clutched me by an arm, and in a second I seemed to be fighting for dear life. This struggle seemed to last no end of a time, and culminated in my arrival, solus, at the surface of a dark, strong-smelling pond—a sort of Avernus—when suddenly the light came, and I ceased to dream. The dentist was crushing up fangs and the pieces were falling on my tongue and throat."

The above we need hardly say eminates for the Pall Mall Gazette, which appears to have made "gush" and hysterical high-falutin a speciality. We recommend the excitable creature who wrote the above when next he, or shall we not rather say *she*, requires a tooth removing to go to some one who knows how to extract and who has gas properly administered. We have seen the same nitrous oxide given more than once but we have never come across grunting operators who in the presence of their patients indulged in the questionable habit of calling awkward extractions "nasty jobs." A word of caution may, however, be given, there certainly is, as Dr. Dudley Buxton has pointed out, a period just before and just after unconsciousness under the gas, when the patients senses are peculiarly keen and liable to give rise to hallucinations, it is very unwise to indulge in any conversation, or make remarks about the operation at this time, as patients are sure to get hold of the wrong words and draw inferences not always favourable to operator or anæsthetist.

PREPARATION FOR THE DESTRUCTION OF PULPS.—

R.	Caustic potash,	gr. xij.
	Arsenious acid,	gr. x.
	Arquæ puræ, q. s. to make paste ; add	
	Cocaine,	gr. x,
M.	SIG.—Use same as arsenious acid.	

An exchange gives the above as being something worth knowing.

EULYLYPTOL, A NEW ANTISEPTIC AGENT.—Dr. Schmeltz employs under this name, a mixture of six parts of salicylic acid with one each of phenol and oil of eucaylptus. It is described as having a strong aromatic odor, and an acrid burning taste, is nearly insoluble in water, but dissolves readily in absolute alcohol, ether, chloroform and a mixture of equal parts of alcohol and glycerine. It is also soluble in ammonia and in alkaline solutions. Dr. Schmeltz regards it as superior to iodoform, corrosive sublimate, or phenol. It completely arrests fermentation and putrefraction.

Post Graduate Classes at Edinburgh.—The following lectures and demonstrations will be given in the Dental Hospital, Chambers Street, Edinburgh, in connection with the Medical Post Graduate Course, 1887. Tuesday, 27th September, "Dental Operations with and without Anæsthetics," by Mr. Andrew Wilson and Mr. G. Stewart Durward; Friday, 30th September, "Demonstrations in Administrations of Nitrous Oxide Gas," Mr. Durward; Tuesday, 4th October, "Demonstrations of the use of Cocaine in Dental Surgery," Mr. S. W. Watson; Friday, 7th October, "Demonstration of Appliances used in the Treatment of Fractured Lower Maxillæ," Mr. Amoore; Tuesday, 11th October, "Diseases of the Dental Pulp, their Pathology and Treatment," Mr. Watson; Friday, 14th October, "Operations with and without Anæsthetics," Mr. Wilson and Mr. Durward.

Tooth Powder.—The following tooth powder is said to be advantageous in irritated and inflamed gums, accompanied by tenderness around the cervical margin of the teeth:

R	Boracic acid,	gr. xl.
	Chlo. potassium,	ʒ ss.
	Powdered guaiacum,	gr. xx.
	Prepared chalk,	℥j.
	Powdered carb. mag.,	℥j
	Attar rose,	gr. ss.
M	Sig.—Use once a day.	

B.D.A.—Western Branch.—Before this issue is in the hands of our readers, the annual meeting of this branch will have taken place. Papers have been promised by Messrs. Charters, White, Wait, Spencer, Bate, and others ; while Messrs. Balkwill, Browne, Mason and Parson, will give demonstrations. The Stroud meeting will doubtless prove a great success.

Abstracts of British & Foreign Journals.

ITEMS OF INTEREST.

CEMENT.

J. F. Sanbon, D.D.S., Tabor, Iowa.

The writer enquires why oxy-chloride and oxy-phosphate of zinc should be used to the exclusion of other materials.

Nearly all the metals are found in a combined state as ore, and the metals that constitute the alkaline bases, as potassium, sodium, and calcium, have a strong affinity for oxygen.

Calcium first unites with oxygen to become lime, which subsequently united with carbonic di-oxide to become limestone.

From these facts we learn that our cement must become a stable compound by the base becoming thoroughly oxidised so as to be proof against the further action of oxygen.

For this reason we select the oxide of zinc, which has been first volatilised, and then oxidised, when it falls down as a fine white powder, unchangeable in the air, and insoluble in water or the fluids of the mouth. This powder is entirely unfit, as now constituted, for our purpose. Limestone is composed of calcium oxide as a base, and an acid, carbonic di-oxide, two oxidised compounds, the one an alkaline base and the other, an acid : the first a solid, the other an acid fluid or gas.

The lime (CaO) is well calculated for a base, with strong affinities ; the other, carbonic di-oxide, is the weakest of all the acids, and because weak is liable to change whenever it comes in contact with any other acid. Calcined plaster of Paris is another cementing compound, composed of a sulphate of lime in this we have the same lesson from nature; calcium first combines with oxygen to form lime, and then with sulphuric acid and water. The sulphate of lime has a much stronger cementing power than the carbonate, because this acid is the strongest of all the acids, so does not yield to the action of other acids and become decomposed. In the crystallising process of all the cements, it becomes necessary that the ingredients should be reduced to a fluid or nearly fluid condition.

It seems in plaster of Paris, a too great a degree of heat will destroy the setting property of plaster, so that when used to encase teeth for soldering, on being heated to a degree sufficient to solder gold plate, it becomes "burnt plaster" and will not set a second time, because of the decomposition of the sulphuric acid of the plaster. The ordinary calcining of plaster consists in heating it from 300 deg. to 400 deg. Fahr. which drives off the water of crystallisation. In the mixing with water for use we add two parts, one of which unites chemically with the plaster to form the water of crystallisation, and the other is retained mechanically in the cast, and may be dried out by applying to it a gentle heat. Calcined plaster of Paris is like all other cements, an acid united with an oxidised metal base. Zinc is very oxidisable in a volatilised state, and then becomes insoluble. This is why it is selected as the base for our cement.

If we use a weak acid our filling will be decomposed by the stronger acids to which it may be exposed; if we use a strong acid it will react on the tooth structure and destroy it.

Hydro-chloride of zinc has been used as the acid portion of the cement, but its escharotic character acts on the nerve fibrils of the tooth, even after it has been mixed with the oxide, and occasions pain, and so is less desirable than the hydrated glacial phosphoric acid.

The addition of some other ingredients as an alkali or neutral salt may be of some use in overcoming the deliquescent tendency, and may have a mechanical use in filling the pores of the cement and thus avoid a tendency to contract in crystalising. In applying the cement to the cavity of the tooth, the more perfectly the process of crystallisation takes place before being exposed to the action of the fluids of the mouth, the more enduring it will become. It may be used in the teeth of very young children, where the cavities cannot be properly prepared with retaining points or under-cuts, because it adheres to the walls of the cavities as it adheres to the vitrified surface of the porcelain slab on which it is prepared. It has a decided tendency to adhere to the instrnments while packing it in the cavity; which may be prevented by the moistening of the instrument with some of the fluid acid, placed near by for that purpose. Oil has been recommended, but it will prevent the cohesion of any further addition of the material, but fluid acid will not. Cement fillings are not permanent in character; but under favourable ciacumstances they will stand from two to six years; so that they subserve a useful purpose. When we can compound a cement that will remain as unchanging as gold, as enduring as porcelain, as adhesive as oxychloride of zinc, as much in harmony with tooth structure as oxyphosphate, of the colour of tooth structure, and last but not least, as impervious to moisture, and is of the same expansion and contraction under thermal changes as tooth structure, then we shall have the ideal cement that shall displace the elaborate filling that are now the pride of the profession.

THE DENTAL REGISTER.

CURE OF ALVEOLAR ABSCESS BY GUTTA PERCHA.

Dr. D. R. Jennings.

There can be no alveolar abscess unless there is absorption of the alveolus, and that this absorption makes a cavity which must be disposed of to effect a cure. The plan of procedure the writer recommends in such cases is: As soon as there is an abscess formed it will be found that the root of the tooth after extraction has become denuded of its periosteum where the sac is attached. The point is to get rid of the abscess and restore to a healthy condition.

The writer recommends the plan of filling the whole of the abscess cavity and root canal with a solution of gutta percha in chloroform. To make this, take a portion of gutta percha; cut into small pieces and put into a bottle containing chloroform, enough to make a paste of the consistency of thin cream. Clean the pulp chamber, root canal, and abscess cavity thoroughly—exhausting all the pus from the sac at and around the roots—wash with alcohol and water equal parts, or with peroxide of hydrogen; dry as well as possible.

Then with one of Donaldson's little bristles, made for cleansing root canals, with cotton fibres wrapt around it, dip into the gutta percha solution and introduce into the pulp chamber and roots, using the cotton wrapt broach as a piston to pump the solution through the root canal into the cavity of the abscess, continuing to force the solution through the root till it makes its appearance at the sinus opening. If it is found coming too freely, lay the finger on the opening, thus causing the solution to be forced into any and every place around the root, where the sac is, in this manner strangulating it and preventing the gathering of lymph to be subsequently decomposed into pus. The abscess is thus destroyed. The gutta percha being an inert substance, becomes encysted, nature thus assisted goes on and closes up the sinus ; and you will have no more fear than if they had never been an abscess. It has one more recommendation, to the patient at least it is painless.

Literary Notices and Selections.

CROWN AND BRIDGE-WORK.

By A. G. Bennet, D.D.S., Philadelphia, Pa.

(*Continued from page* 694.)

In regard to the progress of this new system of dentistry, it may be said in general that more is to be feared from the zeal of the blind enthusiast than from the opposition of the most conservative ; for, while the latter at the worst may deny the subject a hearing, the former will bring it into discredit through inexperience and want of judgment. But bridge-work within certain limits, which will be indicated later, has such positive merits, that, on the one hand, it does not come begging for recognition, nor, on the other, does it need any partisan pleaders or special advocates.

Crowning.—Of the two parts of a tooth, the crown and the root, the former is much more exposed to destructive agents, and depends for its preservation chiefly on the skill of the operator ; while the latter is comparatively well protected against external causes of disease, and, when pulpless, depends for its integrity on the proper application of germicides and disinfectants, and for the retention on the health of the peridental membrane, which gives vitality to the cementum. At an early day crude attempts were made to utilize the roots of teeth for attaching artificial crowns. For years this branch of dentistry made but little progress chiefly because dental pathology and threapeutics had not yet shown the true condition of pulpless teeth not indicated the proper remedies for their treatment. During the last decade, however, crowning has made great progress, until now it can be truly called one of the most durable and satisfactory operations in modern dentistry.

As already intimated, when from poor structure or worse dentistry a crown must be lost, the operator makes his next stand at the root, where his work not only gives promise of more permanence, but incidentally sets up a more durable barrier against the inroads of decay than is found in many fillings. Such a crown is here referred to as will easily withstand the force of mastication, and protect the root from the action of the oral fluids.

Since the most important part of a bridge is a crown, and the basis of this is a band, some details which are perhaps familiar enough are required. Almost all the crowns in use have decided merits, but for several good reasons the band or ferruled crown is the best, especially for the piers and abutments of bridges. The band or collar not only greatly strengthens roots that have been weakened by decay, but *brings the force of mastication against the entire root*, and at the same time most effectually protects its end against the action of the oral secretions.

There are various methods of making what is now known as the Richmond crown, the one most frequently used in bridge-work. Of the various modes of making the band or ferrule, which is the basis of this crown, that of course is the best which saves time, labour, and pain. The following are the several steps, and, I think, the easiest and quickest methods, in the process of making a Richmond crown. For convenience of description, the cap over the *end of a root* consists of band and base plate; a cap over a *whole tooth*—a bicuspid or molar—is called a cap-crown :—

1. Trim off the tooth to the gum, except at the palatal side, where it can be from one-sixteenth to one-eighth of an inch in length. Cut it off with thin-edged corundum-wheels or sharp retaining-point drills, using the excising forceps sparingly.

2. Scale the enamel from the root, thus making its sides

parallel (Fig. 1), so that the bands may *fit closely their entire width.* Unless the enamel is scaled at least from the front and sides, even a narrow band will leave the root and pass into the gum.

3. Form the band by annealing and bending a piece of 22-carat gold, 28 or 29 gauge, about the round handle of an excavator, a trifle *smaller* than the root, so that in pressing it up to place the gum is not wounded. If the root is not round, the band may be flattened, or otherwise shaped, by pressure with the fingers or suitable pliers.

4. Trim the upper border of the band to conform to the shape of the process, or the line of the gum-attachment; then carefully bevel and smooth the upper edge, so that the soft tissues are not lacerated, or the gum torn from the tooth. Unless the band is greatly depressed laterally, in some cases, the gum will be detached from the tooth at the sides before the root is covered high enough at the front and rear.

5. Place the band thus shaped against the root; spread it out a little with the end of the finger, and press it up to where the soft tissues are attached to the tooth, which is shown by the slight whitening of the gum under pressure.

6. Let the band lap at the palatal side, and, making sure that it is close all around, remove it from the root with soldering pliers; then make it a little smaller, so that when it is soldered it must be gently driven into place.

7. Trim the lower border of the band, so that when the cap is completed it will have two slopes from about the centre —one to the front, the other to the palatal side.

8. The base-plate is more easily and quickly soldered on, not by fitting it *inside* but *against* the end of the band. Press the annealed base-plate against the cap with the fingers, and hold it in place until soldered with one or two strands of thin wire.

9. The canal should be enlarged towards the palatal side of the root, thus giving more room to grind on the tooth when the pin is in place with its lower end bent away, and securing at the same time the greatest attainable strength when the crown is completed.

10. File the labial slope of the base-plate perfectly flat; then grind the end of the tooth slightly concave, so that after soldering a close joint may be secured by closely adapted to the porcelain.

Of these various steps in the making of a crown, scaling the enamel from the root is the most important, and bears the same relation to a perfectly-fitting band as a properly prepared cavity does to a good gold filling. The most effective instruments I have found for this purpose are my chisel-excavators and Dr. Jack's hard bits Nos. 13 and 14, the latter being used for the approximal surfaces. But when the teeth are close or in contact, nothing is so effective or painless for starting the work of scaling as the ordinary chisel and mallet used with care. These surfaces must then be scraped smooth with the hard bits just mentioned.

Scarcely less important than the scaling of the enamel is the slight crimping in and burnishing of the upper edge of the band just before its final adjustment. This is necessary because, no matter how nicely the band may fit at first, it becomes somewhat stretched while making the crown.

Bridge-work.—If our efforts are saving or substituting teeth were always successful, then it might truthfully be said that we have no need of bridge-work or anything of that nature. But is it not an indisputable fact that, in spite of care and skill and experience, fillings do not always save the crowns of teeth? Nor can all plates be retained in any manner that always proves satisfactory.

All operations in the oral cavity are necessarily "submarine," and the whole art of dentistry may be compressed into one word—*adaptation.* We strive by perfect models and close joints to attain this in making plates, and aim at the same thing by removing angles and rough surfaces in cavities for gold fillings.

The two essential points in the piers and abutments of bridges, as well as in the bridge itself, are *strength* to prevent breakage, and *fluid-tight joints* to prevent leakage.

What is said about bridge-work in this paper does not refer to any particular system, but means a denture of this kind so constructed that, besides having all the qualities of the crown described, it shall have ample strength, admit of easy cleansing, and be entirely free from the gum. It is strictly true to say that a bridge which rests on a gum is no bridge at all. The so-called bridges of this kind are really narrow plates fitted to the parts by the usual impression and fastened around or over the other teeth.

Success in making bridges is no more difficult to attain than in gold filling, the most difficult part being the making of the crowns. Close joints about the bridge proper are almost as easily secured as around a gold fillings, since a thin backing can be closely burnished, and the end of the tooth ground thin and narrow where it rests against the gold cusps.

The most defective and weakest part of a bridge is in the front facings, which when made of the usual plate-teeth are very liable to break off. And we need some strong method of using bicuspids and molars without the expensive gold cusps and palatal surfaces. These defects are overcome, to a great extent at least. by the device of Dr. Williams, which consists in forming or cutting a groove across the top and down the sides of the tooth, and into this burnishing very thin platinum, which is then covered with solder to the required thickness. When such a tool breaks it can easily be replaced without detaching the bridge. Descriptions and illustrations of this device are seen in "The American System of Dentistry," so it need not be further noticed here.

Bridges and Plates.—A bridge is a new mode of inserting partial set, and can therefore be prepared with or contrasted to a dental plate. A pertinent question here is this : What is the most natural method of constructing and retaining artificial teeth ? When the crown, which is the perishable part of the tooth, is lost, dental science but confirms the lessons of experience as to the possibility and advisability of of saving the root, as a basis for an artificial crown ; and yet, judging from what one often hears and reads, it seems to be assumed that a plate is the normal basis for artificial teeth. It can easily be shown to be the most abnormal and injurious. Is it not a fact that *the teeth and their roots and not the alveolar surfaces*, are originally intended and specially designed to bear the force of mastication ? It is not the alvevolar border, much less the palatal surface, than normally sustains the impact of attrition. It is of course freely admitted that the dental plate has been and will long be of great surface to multitudes of people ; but note for a moment the effects of contact and pressure, as shown in the denuded necks of teeth and the wasted alveolar surfaces.

If bridge-work had always been practiced, and plate-work were now introduced, what protests we would hear from the profession, and what complaints from patients ! And yet in time dentists would learn to make plates, and patients would learn to wear them.

There are several striking differences between a bridge and a plate. The first is the immovable retention of the former, as compared with the moving, tilting, rocking, or dropping of the latter. The second difference in favour of the bridge is the absence of all pressure or even contact against the mucous membrane. The third difference is the absence of all material that decreases the normal dimensions of the palatal vault or injures the soft tissues. The forth difference is that a bridge dispenses with all vegetable bases, which by their porosity and non-conductivity have not infrequently been a discomfort to the patient and a source of disease to the parts they cover.

It is by no means asserted that bridges can or should in all cases be substituted for partial plates; but it is claimed that small bridges at least have such marked merits, and plates have such positive defects, that dentistry needs both. Plates do not cover the entire ground of substitution, as the experience of too many patients even from the hands of the best too clearly testify. Every one practising dentistry should be able to recognise difficult cases for plates before the teeth are extracted, and should know almost at a glance the meaning of small jaws as well as flat, hard, dry, or excessively soft, moist conditions of the alveolar or palatal surfaces. And difficult full lower cases—what practitioner does not know that the only sure remedy is prevention? Of course this is not intended for those whose fillings never fail, whose extracting always extracts, and whose plates have such adhesion as always adheres. But bridges as now made are too costly to be within the reach of all, and for years the rule may be,—bridges for the few, plates for the many. I think, however, that the inventive ingenuity of the profession can be relied on to produce something within the reach of moderate means.

If a partial set on a plate with or without clasps can be shown to be all that is required as to comfort, strength, usefulness, and durability, then perhaps bridge-work is not needed; but in point of fact a large number of partial dentures are partial or entire failures on the score of utility, while at the same time they have inflicted no small amount of injury on the parts covered by the plate and on the remaining teeth.

Anchorages.—The value and durability of bridges in general, and of the dental bridge in particular, depend almost entirely on the strength and permanence of the piers and abutments. The health, and strength, and position of the anchorage roots or teeth are of the utmost importance. The abutments of dental bridges are usually the cuspids and molars or wisdom-teeth; the piers are generally the central incisors, the cuspids, and the bicuspids. The front teeth, when devitalised or badly decayed, are cut off; the back teeth properly shaped and capped in. At the second bicuspid we draw the line between capping in and cutting off. As already stated, the two essential points in all crown and bridge-work alike are *strength* and *moisture-proof joints*, so as to resist the ever-present forces in the oral cavity. In many a case *strength* cannot be secured without removing the crowns of one or two vital teeth may or may not be decayed. Against this there has been much protest; and what is good or bad practice cannot be settled yet. Nor should the advocate of bridge-work be in haste to brush aside what he may regard as a thin skirmish line of opposition, because there may soon be found a more excellent way than the sacrificing of sound teeth. But the entirely sound teeth aside, what teeth should be cut off for abutments and piers? I answer that I think it good practice to cut off the crowns of any of the eight anterior teeth that are devitalised. In the first place, teeth in cases requiring partial sets or bridges are usually of inferior structure, and when such teeth are pulpless are not very durable or presentable; and a good artificial crown has a better colour, and is more permanent than a natural one without a pulp. As to the cuspid, which has been too frequently cut off when entirely sound, it can now be capped in leaving the labial surface exposed. It is not always necessary, even if it were always practicable, to grind off the sides and cap the molars, as these teeth frequently have crown or approximal cavities, which can be prepared to receive the end of a bar, which is anchored with amalgam or gold. A wisdom-tooth seldom needs any ginding, except on the crown surface; for, of all the posterior teeth, this one is best adapted by its shape to be incased by a cap-crown, to serve as an abutment for a bridge. Of all modes of anchorage, the one least liable to give trouble or change in any way is a vital tooth carefully incased with a cap-crown. But the *neck of the tooth must be closely encircled*, or it will, sooner or later, be girdled by decay. If for any reason the sides of a tooth, molar or bicuspid, cannot be made parallel, it should not be cut at all, except the cusps, but it should be incased in a cap which extends to the *greatest diameter* of the tooth, or about half way to the gum.

Limitations—Bridges, even more than crowns, require the presence of strong and healthy roots; and besides, they demand that the width of the spaces to be spanned shall be governed by the size and strength of the roots or teeth. In must be evident that four strong teeth or roots in a small jaw will anchor a denture more securely than five or six roots in a large jaw; and even in an average case four strong points of anchorage will hold an entire denture more firmly and permanently than the cuspid roots will sustain the six front teeth.

It might be asked of those who oppose bridge-work and yet practice crowning, "Where do you draw the line?" Take a few typical cases: Case 1.—The right lateral is gone; the right central devitalized and badly decayed. In the days of Webb a lateral—an ordinary plate-tooth—was anchored with gold wire into the pulp-canal of the central, this tooth being restored with gold, a long—exhausting, and not always very durable or sightly operation. Nowadays anyone that does crown-work at all would put on the central a Richmond crown, and to this attach the lateral. Here is a small bridge, though one end "hangs in the air;" or if there is a cavity in the cuspid a spur may extend to it. Cash 2.—If the remaining incisors were in a similar condition, the other central, even though vital, would be cut off and crowned and the lateral attached as before, all the teeth being soldered together. This is a typical bridge, which if properly made is *stronger* and more *durable* and *comfortable* than any piece of plate-work that can be constructed. Case 3.—The first molar and the first and second bicuspid are missing. The cuspid being badly decayed is crowned, the second molar incased in a half-cap which reaches about midway to the gum, and the bridge is attached to these. This is again a case that can be made very strong and is very easily kept clean. Case 4.—All the bicuspids and molars are wanting and the cuspid sound—the teeth being good on the other side of the mouth. A bridge here would I think generally be advised.

I will now give a case of my own—one not met with very often, and one in which a plate with or without clasps would not be a success. The jaw is small, the teeth short, and wanting on one side from the wisdom tooth to the cuspid,—this and the lateral, though both vital, being very badly decayed on both approximal surfaces. This is a case which, so far as I can see clearly shows the superiority of a bridge over a plate.

If bridges were confined to such small or comparatively small cases, and the same care and skill as are required to make a good gold filling were exercised in each step of the of the process, I think that the superiority of bridges over many partial plates would be evident to the most prejudiced.

(*To be continued.*)

Dental News.

BRITISH DENTAL ASSOCIATION.—SOUTHERN COUNTIES BRANCH.

The first annual meeting of this association was held on Saturday at the Public Hall. After the general meeting, the following subjects were introduced by Mr. W. George Daish, L.D.S., England, "Suggested treatment of inflamed dentine by nitrate of silver;" Mr. Charles M. Cunningham, L.D.S., D.D.S., Mich., "The history of a mouth treated on the mechanical method;" and Mr. S. J. Hutchinson, M.R.C.S., L.D.S., England, "The treatment of buried wisdom teeth;" and debated upon.

The dinner was held in the Small Public Hall.

After the usual loyal toasts and that of the Odontological Society had been honoured, Dr. Strong said the British Dental Association was it might be said, only in its infancy, and yet it had made giant strides. It was analagous to their British Medical Association in the manner in which it had been formed, and these lines were being followed in the meetings which were being held. Now they were met to celebrate the first annual meeting of the Southern Counties Branch of the British Dental Association. Many of those now present were at the inaugural meeting held at Brighton last year, when on looking round for some gentleman who should occupy the important position of first president, no one was found more worthy than their President of that evening. (Applause). How well he fulfiled the duties at Brighton those who had the honour and privilege of being present well knew, and those of them who read the address knew how well that address was delivered, and how valuable and practical it was to all who were interested, not only to those associated with the Dental Association, but to medical men. (Applause). In the profession of dentistry no one was more esteemed than their President of that evening. It was well known that Mr Rymer was one of the pioneers of reform in regard to the dental branch of the medical profession. In 1855, in consequence of the action that Mr. Rymer took, a few enthusiastic and scientific gentlemen met together, and from the meeting held at their various houses, the organisations which Mr. Rymer had spoken of as occupying a very high position in dentistry, was started. But their President did not end his labours there. At that time anyone could practice as a dentist, and so he still kept on his work, and was not satisfied until the dentists' profession had due recognition, not only amongst the medical profession, but also in the outside world, and the profession had been elevated into its proper position of a science where it was formerly a simple handicraft. They who lived in this town, and who had known Mr. Rymer for so long, were rejoiced to find that he was equally well known and honoured among his professional brethren. But it was not alone in his profession that he had laboured in other places; his energy and activity had equally shown themselves, and as a result of those labours he now occupied the position of Alderman and Justice of the peace for the Borough of Croydon. (Applause). Some might not know how nearly he had lost his life some years ago by a railway accident, and that in fact his remains were sought after in a tunnel, but happily he escaped and was spared to them. He would ask them to drink heartily to the health of the Southern Counties Branch of the British Dental Association, coupling with the toast the name of their President. (Applause).

The President, in reply said he felt deeply touched by this exhibition of their personal friendship and esteem, He was grateful that the accident alluded to had not proved fatal, because, especially, he would not have experineced the pleasure he did of meeting his good friends that evening, sound both in body and mind. He thanked them for the great honour they had done him personally. With regard to the British Dental Association and the Southern Counties Branch, he was positively sure that all connected with it would appreciate the honour done them. It was a very valuable association indeed, and it excluded no man. who was at all worthy of a place as a professional man. He was glad to say that a large number of members had availed themselves of the privilege of joining both the parent association and the several branches, and that they were continually adding to their numbers. With regard to what had been done by that and kindred association in the course of 30 years, he thought they had cause for congratulation. He knew that they would always find come croakers in organizations of this kind, but on the whole he thought they might be thoroughly well satisfied with the progress made. Their profession was now recognised by the Legislature and by the medical profession, and they ought to be well satisfied. Before the time mentioned by Dr. Strong, dentists were a scattered body, and the consequence was that a great deal of information and scientific knowledge that all might have shared in common was confined to a very few individuals. Now a totally different state of things existed, and as bearing witness to this they had many representative bodies in this country, America, France, Germany, Austria, and even Russia. Comparing the position of the dental profession now with what it was at that time it was something marvellous and wonderful to his mind, that the progress was so great, so decided, and so certain to continue. (Applause). An incentive had been given to this by the British Dental Association, whose efforts from a scientific and literary point of view were most valuable, and which also gave them the opportunity of meeting together in a pleasant social way as on the present occasion. (Applause).

PROFESSOR MARSHALL ON DENTISTRY.

At the conversazione held at the rooms of the Medical Society of London, Chandos street, W., in connection with the Dental Hospital, Leicester-square. *John Marshall, F.R.S. President of the Medical Council*, addressed the students. Adopting a practical line of remarks, he gave an interesting account of the impression produced on his mind by a recent visit to the hospital. He saw the museum, the lecture rooms, the operating rooms, the students' rooms, and the library. He found in one room a perfect magazine of chairs—chairs which gave one a sort of shudder to think of the amount of suffering that had been endured in them, but a shudder which passed away with the thought of the corresponding amount of relief that had been experienced in them. The professor caused some amusement by relating that these self-same terrible chairs reminded him of the two pictures he had seen in *Punch*. One represented a widow lady taking a little boy into a dentist's, while a little rascal in the street calls out, "Won't he give you a 'scrooge'." The other showed an apple-faced urchin coming out of a dentist's, saying to himself, "Now, I know what I will be," as though he thought how much he would like to pay other people out. The chairs brought to his (the professor's) mind the ferocious aspect of dentistry, which seemed less forbiddng when he saw the arrangements for operations with anæsthetics. He was informed that over 42,000 patients had attended the hospital in the course of the year. This meant that there were on the average, 140 patients daily accessible to the students. He understood that there were between 70 and 80 students on the books. Assuming that the average attendance was 40 or under, there would be from three to four patients for each student. This he thought, was a very good proportion. He was pleased to find that the teaching staff and the anæsthetics were so numerous that of the former two attended each day and of the latter one. Besides this there were systematic lectures. Most of the prizes, he observed, were given by the teaching staff, and he thought that a very good sign, showing as it did that the professors took an interest not only in their work, but in their pupils too. He urged the students when they had concluded their studies not to neglect registration. Of the 306 students who had been connected with the hospital, 70 had not registered. This seemed a large proportion, but he thought it might be accounted for without taking too unfavourable a view. When he had made allowance for older practitioners, such as those who belonged to 1860-70, and for others who were abroad or not practising in a locality, he found that there were unregistered 35, of whom 26 had only just entered the profession, many, perhaps, as assistants to fathers that were registered. These men must be given time. Possibly, the professor hinted some arrangement might be come at whereby in the future, registration and school fees might be paid together. In conclusion, he urged upon the students the importance of adhering to the principle of duty. (Cheers). A cordial vote of thanks having been given to Professor Marshall, on the motion of Sir John Tomes, the conversazione was proceeded with.

THE LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.

List of Prize Winners.

Saunders Scholar	Mr. J. H. Badcock.
Prize given by Messrs. Ash & Son	Mr. J. H. Badcock.

WINTER SESSION, 1886.

Metallurgy.

1st Prize	Mr. J. H. Badcock.

2nd Prize	Mr. F. Lonnon.
Hon. Certificate	Mr. A. Frost. Mr. C. R. Morley. Mr. B. Saul.

Mechanical Dentistry.

1st Prize	Mr. G. Seymour.
2nd Prize	Mr. R. H. Bates.
Hon. Certificate	Mr. H. A. Washbourn. Mr. A. H. Frost. Mr. C. R. Morley.

SUMMER SESSION, 1887.

Dental Surgery.

1st Prize	Mr. J. H. Badcock.
2nd Prize	Mr. C. R. Morley.
Hon. Certificate	Mr. J. F. Colyer. Mr. R. H. Bates. Mr. H. A. Washbourn. Mr. W. H. Dolamore. Mr. F. A. Harsant.

Dental Anatomy.

1st Prize	Mr. J. H. Badcock.
2nd Prize	Mr. W. H. Dolamore.
Hon. Certificate	Mr. J. F. Colyer. Mr. F. A. Harsant. Mr. R. H. Bates. Mr. H. A. Washbourn. Mr. C. R. Morley.

Operating Prize.

1st Prize	Mr. G. Seymour.
2nd Prize	Mr. A. R. Colyer.
Hon. Certificate	Mr. C. R. Morley. Mr. H. Picton.

Students' Society Prize.

Awarded for Paper on Dental Anæsthetics	To Mr. A. T. Croucher.

ROYAL COLLEGE OF SURGEONS EDINBURGH.—During the July sittings of the examiners, the following gentlemen passed the first professional examination for the Licence in Dental Surgery :—Harry Brooke Dew, Somersetshire ; William Gray. Edinburgh ; George William Welham, London ; William Herbert Dennis, London ; Henry Hepbur-Chapman, Edinburgh; and Harry Evelyn Mahonie, Sheffieldn passed the final examination, and was admitted L.D.S, Edinburgh.

A CORRECTION.

Dr. Catching writes to say that the Southern Dental Association holds its meeting August 30th, not as we erroneously stated the 3rd.

APPOINTMENTS.

Mr. Adolphus B. Alexander, L.D.S., R.C.S., Eng. has beed appointed Dental Surgeon to the London Throat Hospital, Portland Road.

BOOKS AND JOURNALS RECEIVED :—

The Western Dental Journal, Southern Dental Journal, The Dental Eclectic, Centralblatt fur Zahnheilkunde, The Independent Practitioner, The Journal of British Dental Association, The Journal of British Medical Association, The Chemist and Druggist, The Pharmaceutical Journal, Transactions of the Pharmaceutical Society, Items of Interest, The Dental Cosmos, Ohio State Journal of Dental Science, The Union, The Pall Mall Gazette, The Chronicle, The Croydon News.

Communications have been received from—

The Dean of London School Dental Surgery, Leicester Square; Mr, Knight, Southsea; Mr. Alexander, London; Mr. Lawrence Vauderpant. Orange, N. Jersey; Mr. Clouston Scott, Swansea; Secretary Western Branch British Dental Association; Dr. Catching, Atlanta, Ga.

ANSWERS TO CORRESPONDENTS.

Mr. Scott, Swansea.—Pressure upon our space prevents our noticing the matter in our present issue. It is, of course, very disgraceful, but it is difficult and expensive to bring the transgressors nose to the grindstone in England.

Dr. Vanderpant.—We have already noticed the leaflet and drawn attention to its usefulness.

British Journal of Dental Science.

No. 470. LONDON AUGUST 15, 1887 Vol. XXX.

LECTURES ON DISEASES OF THE JAWS.

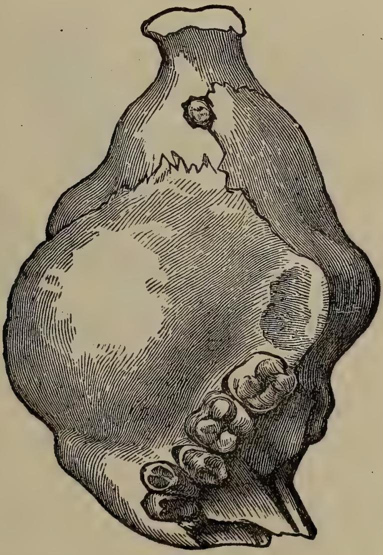
By CHRISTOPHER HEATH, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

(*continued from page* 711)

LECTURE II.—TUMOURS OF THE JAWS.

Fibrous tumour is the commonest form of growth in the lower jaw, and, as pointed out by Paget, this may take the endosteal or periosteal. The formation of fibrous tumours between the plates of the lower jaw originates, I believe, in

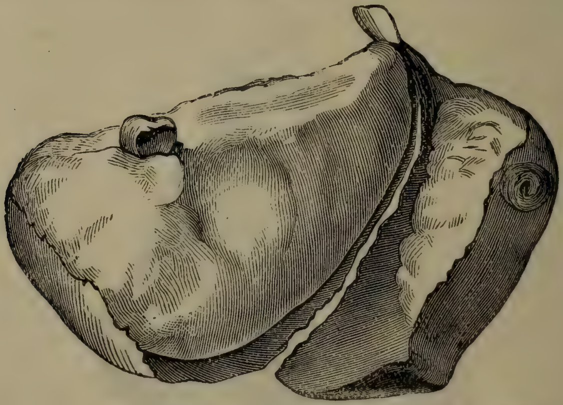
Fig. 8.



the majority of cases in some inflammatory deposit due to the irritation of decayed teeth. By the slow growth of the tumour the jaw is expanded, the outer plate yielding more readily than the inner, as is well seen in a preparation in University College Museum (Fig. 8), which also show as curious transportation of the wisdom tooth close up to the condyle of the jaw by the growth of the tumour, being probably connected with it in some way. In the College of Surgeons' Museum (2219) is a good specimen of endosteal fibrous tumour, which Sir. Spencer Wells removed with the jaw from the symphysis to the angle, in a woman aged 27 The tumour occupied the left side of the lower jaw, and had existed for four years, being connected with decayed teeth, one of which on being extracted shortly before the operation brought a small portion of the tumour away with it.

It may, I think, be doubted whether a milder treatment than that of removal of the whole thickness of the bone containing tumours of this description might not sometimes be adopted with advantage. A specimen in the Museum of King's College, which is represented in Fig. 9, admirably illustrates this view. It is a fibrous tumour, removed, when I happened to be present, by Sir. William Fergusson, from a woman who had undergone two previous operations. Having sawn the jaw partly through on each side of the tumour, the operator applied the bone-forceps to complete one of the sections, when the outer plate of the jaw with the greater part of the tumour came away, leaving only a small

Fig. 9.



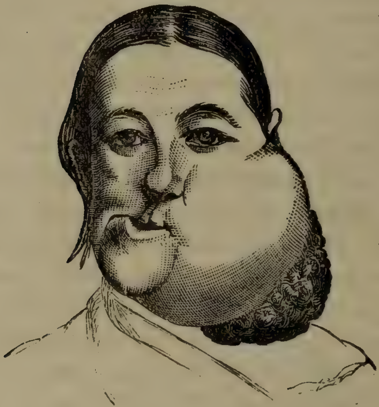
portion of it adhering to the inner plate. Owing to the jaw being already divided, it was considered better to complete the operation as originally intended, and the patient made a good recovery. The preparation referred to, illustrates also the connection of the teeth with fibrous tumours, a diseased molar tooth being implanted in the upper part of the tumour.

Though of a slow growth under ordinary circumstances, a fibrous tumour of the jaw, if irritated by the injudicious application of useless remedies with the view of producing absorption of the growth, may assume enormous proportions, and destroy life by the irritation and continuous discharge it gives rise to. A preparation in King's College Museum shows a fibrous tumour of large size, involving nearly the whole of the left side of the lower jaw. Its interior is hollowed out into a large cavity with sloughing walls ; and there is a large aperture communicating with it, surrounded by healthy skin. The patient's portrait, taken about six weeks before her death is seen in Fig 10. The case was evidently one of ordinary fibrous tumour depending originally upon diseased teeth, which, by dint of incisions and injections of iodine into the growth, followed by a seton introduced beneath the skin, was brought into such a condition that, upon the receipt of a blow, it rapidly brought the patient to her death-bed.

A remarkable and unique figure in connection with the case of a large tumour above referred to is seen in Fig. 11, which shows the front of the base of the skull of the patient. The long-continued pressure of the tumour of the lower jaw had given rise to a remarkable contraction of the hard palate and alveolus, the teeth being crushed togetherso as to overlap one another ; and at the same time an expansion of the malar bone and zygoma has ensued, which is accurately shown in the figure.

A large tumour of the same kind, weighing eighteen ounces, which has encroached upon the condyle and coronoid process and projected into the mouth as well as on the surface, is preserved in University College Museum (652), and was removed by Mr. Liston in 1846 ; and a similar growth, successfully removed by Professor William Beaumont, of Toronto, from a boy of 7, which is considerably infiltrated with calcareous matter, is in the Museum of the College of Surgeons (2218), and was originally considered to be cartilaginous. It weighed eight ounces avoirdupois, with a long diameter of $3\frac{4}{10}$ inches and a short diameter of $2\frac{8}{10}$ inches and involved the whole of the left side of the bone.

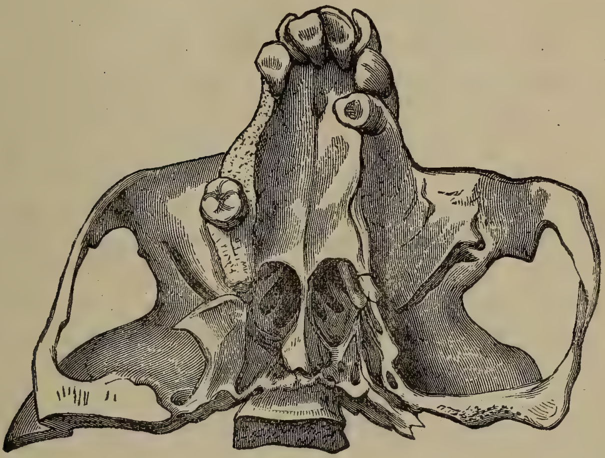
Fig. 10.



Fibrous tumour is most frequently developed in the side of the lower jaw, where the space between the plates is larger than elsewhere, and may occupy the dental canal, as in a case of Mr. Cock's, in which the dental nerve passed through the tumour, necessitating its removal in two parts. Occasionally, however, fibrous tumour invades the symphysis, and here, owing to the restricted amount of expansion of which the bone is capable, absorption of the anterior surface takes place at an early date, and the tumour projects, involving also the adjacent bone. A preparation in University College (655) shows the symphysis affected in this way, which was removed, with a portion of healthy bone on each side, by Mr.

Liston. A section shows the structure very well, and at the lower part a small cyst has been developed. In connection with this subject, another preparation in the same museum (654) is deserving of notice, being a fibrous tumour, of the size of an orange, connected with the back of the symphysis and apparently, therefore, of the periosteal variety.

Fig. 11.



The *periosteal variety* of fibrous tumour is not distinguishable from epulis except by its size. Like epulis, it has spicula of bone springing from the jaw, permeating it for a short distance; and beyond them radiating lines may be seen in the fibrous tissue. Preparation 2221 in the Museum of the College of Surgeons, for which I was indebted to Mr. Lee, of the Salisbury Infirmary, illustrates this form of disease very well, the fibrous growth being closely connected with the periosteum of the front of the jaw. The disease may, however, almost completely surround the aw, as in the preparation in St. Bartholemew's Hospital, drawn by Sir. J. Paget in his *Surgical Pathology*.

Enchondroma of the upper jaw is of uncommon occurrence, but the jaw may become involved in cartilaginous tumours springing from other bones of the face. Of this there is an example in St. George's Hospital Museum (XVII. 66.), taken from a young woman who, seven years before her death, began to suffer from soft elastic tumours on the inner side of the orbits. Two years after the right maxillary bone was fuller below the orbit than the left, and the right half of the bony palate was larger and more depressed than the other ; but in neither of these parts was there any softening. Gradually the eye-balls were protruded, and the sight was lost. Two years later, it was noticed that the superior maxillary bones projected nearly an inch beyond the inferior, so that she had some difficulty in masticating. A portrait of this patient is preserved in St. George's Museum. The tumour was found to project into the cranium, the orbits, the antra, and the nasal, zygomatic, and pterygo-maxillary fossæ. All the fossæ were quite filled up by the growth, and the bones of the face and orbits extensively absorbed. The hard palate was pressed downwards, so that the teeth on the two sides deviated from their natural line, and the left central incisor crossed that of the right side. Microscopical examination of the tumour showed it to be composed principally of cartilage.

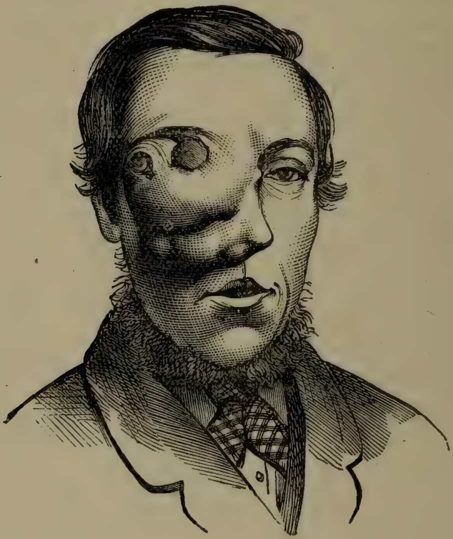
In the Museum of St. Bartholemew's Hospital is another *post mortem* specimen of cartilaginous tumour of the face, from a lad of 16 (XII. 1773), occupying the situation of the superior maxillary bones which are completely absorbed. Above, the tumour has extended through the left side of the base of the skull into its cavity, where it forms a large projection in the situation of the anterior lobes of the cerebrum ; below, it is united to the soft palate ; in front, it protrudes and distends the left nostril, and has caused the ulceration of a part of the integuments of the face. The outer surface of the tumour is nodulated ; its interior, shown by the section, is formed of close-set nodules and masses of cartilage, partially and irregularly ossified, and in some parts intersected by layers of a softer, probably fibrous tissue. A portion of its external surface projecting below the left nostril has sloughed. This case is drawn in Mr Stanley's illustrations to his work on *Diseases of the Bones*, and both it and the preceding preparation illustrate very well the tendency of cartilaginous tumours to invade all the surrounding structures, and fill the several cavities.

A remarkable case of recurrent cartilaginous tumour of the face, originating in the upper jaw, was under my own care, of which the following are the particulars :—The patient, aged 34, was admitted into University College Hospital on January 1st, 1868, with a large tumour of the right side of the face. When about 17 years of age he noticed a pimple on the right side of the nose, which increased pretty rapidly, and three months after (1851) he went to St. Thomas's Hospital, when Mr. Le Gros Clark operated, and removed a tumour as large as a walnut. He quite recovered, and was well for a few months, but within a year the tumour had returned. He was then admitted into King's College Hospital, under Mr. Partridge, who, in June, 1852, removed the tumour, which was of an osteo-cartilaginous character, oblong in shape, and of the size of a large walnut, projecting slightly into the antrum, and involving the nasal process of the superior maxillary bone, but in no way implicating the mouth or orbit. From this operation the patient made a good recovery, except that a small fistulous opening was left in the cheek. The man continued in good health until 1857, when he went to America, and after arriving there he found the tumour beginning to appear again, and in 1860 Professor Gunn operated at Anne Harbour, in the state of Michigan, and removed the entire right upper jaw. The tumour, however, began to grow again rapidly, and projected on the face. The surgeons at Maple Rapids, where he lived, wanted to operate again, but the patient declined, and returned to England in 1865. Soon after this an abscess formed in the upper part of the tumour, which was lanced with great relief, but the incision thus made had never closed, owing to the stretching of the skin by the tumour.

The patient's appearance on admission was most unsightly

(Fig. 12), the right side of the face being greatly disfigured by a large tumour, by which the eye was thrust completlye aside, but without loss of vision. Immediately to the inner side of the eye was an open granulating sore of the size of a florin, the result of the incision for the evacuation of matter already referred to. The tumour appeared externally to consist of two portions, separated by a horizontal sulcus, at the bottom of which the fistulous opening resulting from the second operation was still visible. The upper and more prominent portion had invaded the orbit, reaching to its upper border, and extending beyond the middle line of the nose, A small portion of this had, within the previous two months, projected through the left nasal bone. The lower portion of the tumour involved the ala of the nose and adjacent portion of the cheek, both of which were much distorted ; on a small projecting portion of this the skin was adherent. Both the nostrils were completely blocked and had

Fig. 12.



been so for months. Within the mouth it was seen that the whole of the right side of the hard palate had been removed; and in its place there was a smooth, red, oval mass, coming down to the level of the teeth of the opposite side. The scars in the middle line of the lip and on the cheek, resulting from former operations, were still visible. The tumour was solid, and not tender to the touch, the most prominent point being apparently osseous. There was no enlargement of the glands in the neck or elswhere, and the man appeared in good healths The tumour had made decided progress within the previou. few months, and he was anxious to have it removed to which after a conversation with my colleagues, I agreed.

The patient made an uninterruptedly good recovery from the operation. The wound was kept clean by syringing with Condy's fluid; a plug of lint in the frontal sinus was removed on the third day after the operation, and the sutures on the eighth day, the incision being well united. The right eye, which had been much displaced, began gradually to recover its proper position. A fortnight after the operation, the the patient was up and about the ward, and on February 1st, he went out for a walk. On Sunday, February 2nd, he again went out, the house-surgeon not being aware that there was a bitter east wind. This he felt a good deal, and the next day his face was noticed to be swollen and red. This had increased on the following day, when I saw him, and it was evident that an attack of erysipelas was coming on. The patient was at once placed in a separate ward, and active treatment adopted. The erysipelas spread, however, and affected the throat, so that on February 7th he was able to swallow but little, and was becoming rapidly exhausted. By the frequent use of the stomach-pump nourishment was introduced into the stomach, and he rallied for a day or two. Symptoms of pyæmia, however, now manifested themselves, and the patient rapidly lost ground and, after lingering for a week, died on February 17th.

At the *post-mortem* examination the incisions in the face were cicatrised, but the site of the tumour was granulating and encrusted with mucus in parts. On removing the brain, it and the membranes were found perfectly healthy; but the plate of bone between the frontal sinus and the cranial cavity was so thin that it broke in the removal of the brain. There was no appearance of any remnant of tumour either in the frontal sinus or elsewhere, the walls of the large cavity left by its removal being healthy (University College, 616). In the thorax there was abundant evidence of pyæmia, the lungs being filled with pyæmic abscesses. The tumour weighed nine ounces, and consisted of a loose cartilaginous material enclosed in a bony cyst, from which spicula were sent into the interior. At two points, and particularly at the most prominent portion of the tumour, the bone was of considerable thickness.

In many cases of enchondroma a certain amount of fibrous tissue is found mixed with the cartilage, and in some cases, particularly those of slow growth and of long standing, the fibrous has, to the naked eye, almost replaced the cartilaginous element. Of this, an enchondromatous tumour, removed by Mr. Square, of Plymouth, in November, 1866, and kindly given me by that gentleman, is an excellent example. The tumour was of the size of an orange, and occupied the right superior maxilla of a woman, age 47. It had been growing for ten years, and Mr. Square successfully removed it. The preparation, now in the Museum of the College of Surgeons (2216), and of which a section has been made, shows a surface closely resembling a fibrous tumour; but in which cartilage cells are readily found under the microscope. The preparation shows a deep groove in the buccal surface of the tumour caused by the teeth of the lower jaw.

The ossific deposit, beginning at several separate points, which is not infrequently found in connection with enchondromata of other parts of the body, may take place in enchondroma of the upper jaw. A veiy excellent example of this was published by the late Mr. Maurice Collis, of Dublin (*Dublin Quarterly Journal*, August, 1867), and the appearance of the patient is well shown in the lithographic illustrations which accompany that paper.

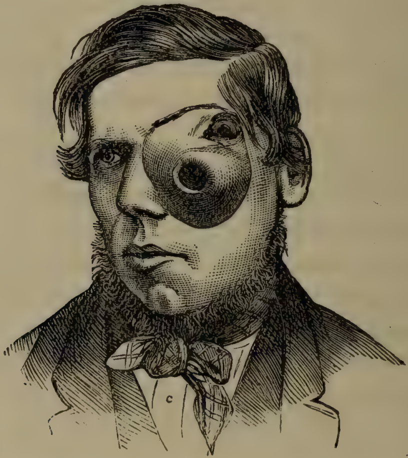
Enchondroma of the lower jaw is not common, but is found of two forms, the endosteal, and periosteal, thus resembling fibroma. A case is recorded by Sir Astley Cooper, in his "Essay on Exostosis," and is remarkable both for the sound pathological views and strictly conservative treatment he therein advocates. The patient was 19, and had had a growth in the side of the lower jaw for three years. Sir Astley exposed the tumour and gouged it away, exposing the dental nerve, and the patient made a good recovery. Sir James Paget has recorded (*Medico-Chirurgical Transactions*, 1871), a very similar case of cartilaginous tumour in the lower jaw of a lady 45 years old. It had been growing during two or three years, extended along the space between the first bicuspid and last molar teeth, was deep set in the jaw, expanding both the walls, and rising to almost the level of the molar teeth. He gouged it out, leaving the base of the jaw untouched, and not cutting any part of the cheek or lip. It did not recur.

The periosteal form of enchondroma springs from the membrane covering any portion of the bone, but most frequently affects the body. It grows to an enormous size, and may cause death either by interfering with respiration, as in Sir Astley Cooper's case, or with deglutition, as in the case from which the preparation in the College of Surgeons (2215) was taken.

Osteoma.—The simplest form of osseous tumour of the upper jaw is an hypertrophy of the whole or of some portion of the bone. In October, 1883, I had under my care in University College Hospital a young woman, aged 25, in whom a painless enlargement of the right upper jaw had been noticed for ten years, encroaching upon the palate and bulging out the cheek. I successfully removed the whole upper jaw, and on section the tumour was found to be simple bone, very dense, but otherwise healthy. One half of the specimen is in University College, and the other in the College of Surgeons' Museum (2211 A).

Besides this form of bony tumour, due apparently to an increase of the cancellous structure of the bone, specimens of tumour as hard as ivory have from time to time been met with. Perhaps the most remarkable of these is one described by Mr. Hilton in the *Guy's Hospital Reports*, vol. i, p. 493, from the fact that the tumour separated spontaneously from the face. The patient was a man, aged 36, who, twenty-three years before Mr. Hilton saw him, noticed a pimple below the left eye, close to the nose, which he irritated, and from that spot the tumour appears to have originated. The tumour, in its growth, displaced the eyeball, giving rise to excruciating pain, which subsided on the bursting of the ball. It began to loosen by a process of ulceration around its margin six years before it fell out, which event was unattended by either bleeding or pain; the tumour weighed $14\frac{3}{4}$ ounces. It was tuberculated externally, and an irregular cavity existed at the posterior part. A section presented a very hard polished surface resembling ivory, and exhibited lines in concentric curves, enlarging as they were traced from the posterior part. The huge cavity left by the tumour was bounded below by the floor of the nose and antrum, above by the frontal and ethmoid bones, internally by the septum nasi, and externally by the orbit, which had been considerably encroached upon by the tumour. This patient was alive in 1865, thirty years after the prolapse of the tumour.

Fig. 13.



A case in many respects resembling Mr. Hilton's case, was under the care of Sir William Fergusson, whom I had the opportunity of seeing operate upon it. The patient was a young man, aged 21, who had first noticed the swelling on the left side of the face twelve years before. It grew for six or seven years, and then remained stationary. Two years before he had consulted a quack, who attempted to destroy it with caustic, and produced the large hole, seen in the lower part of the tumour (Fig 13.)

On admission into King's College Hospital there was a swelling on the left side of the face about the size of an apple, extending from the eyebrow to a line less than one inch above the mouth. Internally it encroached upon the nose, displacing it a little, the nasal bone being pushed forwards and the left ala flattened on the columna; the mass was felt by the finger in the mouth above the gums. The nostril on the same side was perfectly blocked up, the patient being totally unable to breathe through it; the right nostril however, was quite free. Outwards, the tumour extended to the angle of the orbit; the arch was, however, not displaced, but the tumour extended slightly above it. The floor of the orbit seemed displaced. The eyeball was seen imbedded in the most prominent and central part of the tumour, and removed more than an inch from its natural position in the orbit, which was entirely blocked up by the mass. There was no extension into the pharynx. The tumour was everywhere hard, with a slight blush over the surface. In its centre was a round opening, produced by the caustic applied two years previously, of about the size of a shilling, deep, and displaying in its floor black necrosed bone, and discharging pus. The patient said he had suffered neither headache nor pain in the tumour since its commencement twelve years before, and that his sight had been unaffected. Sir William Fergusson operated upon this patient on November 30th, 1867, and succeeded in removing the whole of the prominent tumour, weighing 10½ ounces, which consisted, in all its anterior part, of nodulated bone as hard as ivory, and posteriorly, of very dense ordinary bone mixed with a small amount of cartilage. A section showed an ivorylike mass closely resembling Mr. Hilton's specimen, connected with a mass of very much condensed bone. The tumour sprang apparently as in the former case, from the upper part of the maxilla, and had invaded the antrum, orbit and nostril. The palate was in no way involved in the growth, and was preserved entire at the operation, Sir William Fergusson sawing horizontally immediately above it. Unfortunately the patient sank rather suddenly from inflammation of the lungs on the fourth day.

At the *post-mortem* examination, after removal of the brain, it was found that the affection of the bone involved the base of the skull, there being a projection of the size of a hazel nut from the sphenoid near the optic foramen. This involved the foramen and extended along the sphenoidal fissure, the optic, third, and fourth nerves passing through the condensed bone of which it was composed. The brain was unaffected (*vide Lancet*, February 8th, 1868).

The Specimen was exhibited to the Pathological Society of London, and was reported upon by a committee. The report of this committee, drawn up by Mr. Hulke, which will be found *in extenso* in vol. xix of the *Pathological Transactions*, expresses an opinion that "the hard part of the tumour has been directly formed by the exogenous growth of successive layers of dense bony tissue under the periosteum, which opinion is confirmed by the absence from the hard tissue of the regular Haversian systems so characteristic of secondary bone."

In both these cases the tumour appears to have taken its origin in the upper wall of the antrum, and to have grown forwards ; but tumours of the same kind have been found completely within the superior maxilla, the anterior wall of which has been merely expanded by the growth behind it. Of this, two cases reported within the last few years by M. Michon and Dr. Duka are good examples.

Dr. Duka's case is reported in the *Pathological Society's Transactions*, vol. XVII and occurred in a female native of Bengal, aged 26, and on the right side of the face, which was not much deformed. There was a discharge from the right nostril, which was obstructed, and, on examination, a hard tumour was found within it, which was movable, but could not be extracted, and which had existed six years.

Dr. Duka, failing to extract the tumour by laying open the nostril, resorted to the somewhat unusual proceeding of cutting a wedge out of the hard palate, and thus, after an operation of three-quarters of an hour, without chloroform, succeeded in removing the growth. The patient recovered. The tumour (3497) is preserved in St. George's Hospital Museum. It has an oblong shape, and is not unlike a middle-sized potato, with depressions and elevation passing irregularly over it. The whole bony mass, which is of a compact ivory-like character, weighs 1,060 grains; its long diameter is nearly three inches, the short one, an inch and two lines, and the longest circumference seven inches. The microscope gives evidence of structure closely resembling that of M. Michon's tumour. There are no distinct Haversian systems, but abundance of lacunæ arranged around vascular canals. In some parts of the tumour the characters are very much like those of simple ossified cartilage, clusters of large ossified cells being packed closely together. This case is remarkable from the fact that the attachment of the tumour had given way, and that it was therefore loose in the antrum.

Osteoma affects the lower jaw in two forms: the cancellated and the ivory exostosis. The former is, no doubt, in many cases the result of ossification of enchondroma, as, for instance, a specimen (C, 203) preserved in St. Thomas's Museum, which is of a spongy texture, and which is stated by Sir Astley Cooper to have been removed by Mr. Cline. Occasionally, however, a conversion of the whole thickness of bone into a lobulated mass of spongy bone is met with, of which an excellent example is preserved in St. George's Hospital Museum (II, 185). In this case the tumour, which was of the size of the fist, had been growing for five years, and had been on one occasion partially removed. Mr. Tatum successfully removed the entire portion of jaw affected. A case in which a circumscribed bony tumour, measuring from two-thirds to three-fourths of an inch in diameter, and composed of hard, finely-cancellous bone, was lodged in the interior of the angle of the jaw is given by Sir J. Paget in the *Medico-Chirurgical Transactions*, vol. liv.

Ivory exostosis appears to affect by preference the angle of the jaw. Of this a good specimen is preserved in St. George's Hospital (II, 191); and O. Weber figures a section of a large ivory exostosis in the same region removed by Chelius. The best example of the kind, however, is in the College of Surgeons (2212), having been presented by Mr. J. F. South. The preparation (*post-mortem*) shows part of the right side of the lower jaw, with sections of a large bony tumour at its angle. The angle of the jaw rests in a deep groove on the middle of the upper surface of the tumour, and in some situations their respective substances are continuous. The tumour projects both below and on each side of the jaw, is of irregular shape, measures nearly three inches in its chief diameter, and is deeply nodulated. It is composed throughout of bone, uniform in texture, and as hard and heavy as ivory.

In the Museum of St. Bartholomew's Hospital is the lower jaw of a young person (I, 3257), with two symmetrical eburnated exostoses springing from the inner surface of the alveolar portion of the bone on either side of the symphysis corresponding in position to the bicuspid and first molar teeth. The markings and slight lobulations of the bony outgrowths are more or less symmetrical. The rami of the jaw are unusually widely separated.

In May, 1870, I removed an ivory exostosis from a young woman, aged 32, a patient of Mr. Ceely, of Aylesbury. There had been a painless enlargement of the left side of the lower jaw for five years, and there was also a smaller enlargement of the right side. A small exostosis also existed on the left pubis. I made an incision behind the jaw and sawed off the growth level to the bone, removing a dense ivory growth measuring two inches in length one inch in width, and three-eighths of an inch thick in the centre (University College Museum, 635). The exterior of the growth presented a finely reticulated appearance, and at the upper part was a small depression filled with cartilage in the recent state. Two years after the operation, I was informed by Mr. Ceely that there had been no reappearance of the growth, and that the other exostosis remained *in statu quo*, and four years latter I saw the patient, who continued quite well.

When the exostosis forms a distinct and circumscribed growth, whether it be of the cancellous or ivory character, it it should be sawn off the bone at the level of the healthy surface, and will in all probability not recur. When, however, the whole thickness of the bone is involved, as in Mr. Tatum's or Mr. South's case, it will be necessary to remove the portion of the bone. Should the tumour be imbedded between the plates of the jaw, it should be enucleated, if possible without any external incision, as in Sir J. Paget's case already mentioned.

(*To be Concluded.*)

COCAINE AND ITS USE AS A LOCAL ANÆSTHETIC IN DENTAL SURGERY.

By William Hern, M.R.C.S. & L.D.S. Eng.

Assistant Dental Surgeon to the Dental and Middlesex Hospitals.

(*Continued from page* 723.)

Dr. F. De Havilland Hall, of Westminster Hospital,* reports an alarming case of laryngeal spasm caused, in his opinion, by cocaine.

A lady æt. fifty-six, who had had a 20 per cent. solution of hydrochlorate of cocaine used with good effect for removal of nasal polypi, had later in the year a 10 per cent. solution syringed into the nostrils, when it produced a condition of spasm of the abductor muscles, such as to threaten asphyxiation, and which necessitated chloroform to relieve it.

Dr. Heymann,† in a communication to the Berlin Medical Society of brilliant successes with Cocaine, mentions the following as an exception :—

After a liberal application of solution of cocaine (strength not mentioned) to the pharynx and larynx for removal of papillomatous growth, the patient remained in an apathetic and sleepycondition for five hours, with open eyes ; he afterwards had considerable difficulty in walking, gait being very uncertain, with general feeling of discomfort ; pulse, temperature, and respiration were increased, and the symptoms did not pass off for ten hours.

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* *Lancet*, November, 1885.

† *M. T.*, November, 1885.

It is more especially in its application as a hypodermic injection that cocaine has gained for itself a considerable renown, and greatly extended its sphere of usefulness, the anæsthesia resulting from its employment in this manner in the *soft tissues* being such as to render painless, or at least to mitigate, the suffering of a very large number of minor surical operations.

The local effects produced by the hypodermic injection of cocaine are more definite and constant than when topically applied. Almost immediately after injection sensibility is deadened around the puncture, and in a few minutes a small circumscribed area of ins ensibility is produced. This remain for a short time, then gradually passes off, and in about twenty or thirty minutes the part has regained its normal conditions.

The hydrochlorate is the salt most commonly used for this method, in solutions varying from 2 per cent. to 20 per cent. or stronger. After several experimental injection. into my arm with various strengths, I have come to the conclusion that pretty definite and constant local effects follow the injection of cocaine under the skin. From one to two minutes after injection the skin around the puncture becomes anæsthetised, the anæsthesia increasing in area and completeness for from five to eight minutes, after which there is a gradual return of sensation from the periphery to the point of injection, reaching the normal in about twenty-five minutes.

The reputation of cocaine as a hypodermic or submucous injection is not, however, a wholly unblemished one, many cases having been reported of grave toxic effects, and still more of unpleasant constitutional symptoms, which have followed its use by this method.

The drug has been used very extensively by surgeons for minor operations, and I think it may be instructive to give the results obtained by a few experimenters as bearing on its use by injection in dental surgery.

Dr. Crosgave,* for small tumour of back, 3½ by 2½ inches, ½ grain in 5 minims of water injected on each side of growth ten minutes before operation ; operation lasting fifteen minutes.

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* *B. M. J.*, January, 1886.

Result—painless, patient remarking that it seemed strange to see knife cutting and yet feel no pain.

Mr. C. Randolph.*—Sebaceous cyst of upper eyelid in little girl æt. twelve. Five minims of 4 per cent. injected.

Result—No pain at all, wound healed by first intention.

Mr. Mayo Robson.†—Epithelioma of tongue removed by galvanic ecraseur. 10 minims of 10 per cent. solution injected deeply into tongue in several places.

Result.—Removed painlessly.

My colleague, Mr. Pearce Gould, of Middlesex Hospital, informs me he has used the drug hypodermically with very good results in the following cases, without the occurrence of constitutional symptoms :—

Two cases of circumcision, adults.
Two cases for ligature of varicose veins.
One removal of small parotid tumour.
Several cases of excision of tonsils.

Radical cure of hæmatocele, &c.

Injecting from 1 to 4 minims of a 20 per cent. solution, and allowing from five to ten minutes to elapse between the injection and operation.

My brother, Dr. Hern, of Darlington, tells me he has used the hydrochlorate with very good results in several minor surgical cases in hospital and private practice,—for ganglion, epithelioma of lip, fistula, &c.,—using two injections of $\frac{1}{8}$ grain each on each side of, or in near proximity to, part to be operated on. No toxic manifestations occurred.

I also find the following *major* operations recorded in which cocaine has been used as the anæsthetising agent :—

Dr. J. Milton Roberts‡ performed two grave operations (one section of head of femur), the cocaine being deeply injected.

Result reported as painless.

Successful amputation of thigh after injection of 1 per cent. into skin, and $\frac{1}{2}$ per cent. into deeper parts. Pain complained of only during sawing of bone.*

For dental operations cocaine has been employed by injection in two different ways : one, a deep injection, the object being to anæsthetise the nerve trunks and produce a central effect ; the other, a submucous injection the anæsthetic effect of which is purely peripheral and local.

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* *B. M. J.*, February, 1886.
† *B. M J.*, February, 1886.
‡ *B. M. J.*, January, 1886.
* *Lancet*, January, 1886.

The results of four cases of *deep* injection by Dr. Raymond are recorded in *Cosmos*, April, 1885.

I. On Dr. Woodbury, for excavation of exceedingly sensitive carious cavity in first right lower molar, 13 minims of 4 per cent. solution were deeply injected close to the right inferior dental foramen, the needle being carried through the internal pterygoid muscle. In three minutes the tongue became thick and numb on right side. In seven minutes almost complete anæsthesia of right half of tongue and gums around inferior teeth. Engine then used to complete excavation without any discomfort. The anæsthesia lasted for twenty-eight minutes. There was some stiffness and soreness of muscles at dinner on the same day, but no symptoms indicating any unusual treatment were felt the next day.

II. Miss C,, æt. seventeen, for whom 10 minims of 4 per cent. solution were injected under the lip close to infra-orbital foramen for excavation of left upper central incisor.

Result.—Incomplete anæsthesia of teeth, but complete numbness of lip and side of nose. In twenty-seven minutes normal sensitiveness completely restored, slight soreness of cheek next day, only noticeable when touched.

III. Mr. D., æt., twenty-five, for excavation of crown cavity in right upper wisdom. 13 minims of 4 per cent. solution injected on nerve at its emergence at infra-orbital foramen ; parts anæsthetised similar to preceding, but cavity in wisdom remained as sensitive as before injection.

IV. Mr. R., for excavation of cervical cavity in first lower left bicuspid, and a previously tried hyperæsthetic buccal cavity in molar. 5 minims of 10 per cent. solution were injected at inferior dental foramen.

Result.—In three minutes tongue anæsthetised ; in ten minutes cavities excavated without any pain further than the consciousness of the instrument's presence. No pain with cold water, but considerable pain felt soon after when stopping the cavities.

Some patients complained of after pain in the region of the syringe puncture.

Dr. Perry's individual experience :—On following day, after injection of two minims close to mental foramen, felt uncomfortable sensation on that side of face, which soon in creased to sudden jumps and starts and pricking sensations. On second day after, uncomfortable feeling much lessened. On third day after, original sensations returned, which were worse at end of day when tired. On the fourth day after, same sensations present, only more pronounced. The further history of the case is not reported.

Dr. Hepburn.*—8 minims of 4 per cent. solution injected in close proximity to the inferior dental foramen, resulting in anæsthesia of lower lip, molar, canine, and incisor teeth, and partial anæsthesia of tongue on that side. Anæsthesia lasted half-an-hour.

In the absence of any experience of this method of injection, it appears to me, apart from the possibility of being followed by unpleasant local symptoms, such as those experienced by Dr. Perry, to be open to grave objections from the danger of wounding important structures, and to be a remedy so disproportionate in its risks to the objects of relief, that I for one should hesitate to employ it for such operations.

As a *submucous* injection for the purpose of extraction, very many dental surgeons have recorded experiments, a *résumé* of which I now give, in some of which the results obtained, both as regards immunity from pain as well as from constitutional symptoms, are so enviously satisfactory that one can only congratulate the experimenters.

Dr. W. Barker† says in the majority of cases of extraction insensibility to pain may be produced by submucous injections of 5 minims of 4 per cent. solution.

Results.—In five to eight minutes the full anæsthesia is produced, the extent of sensibility being limited to a small space around the place of injection. The effect lasts from ten to fifteen minutes, then passes away. Never had any sign of local inflammation, swelling, or systemic disturbance.

Mr. Hunt, ‡of Yeovil, suggested the use of warm solutions of 1 grain in 9 minims of water.

Results in first dozen cases.—"Some patients, *no pain* at all complained of; in all the rest the pain was all but done away with, and they were without exception most gratified."

No constitutional symptoms or local irritation observed.

Professor Redard* records about forty cases of injection of hydrochlorate performed at Geneva Dental School. He injected 50 to 75 centigrams of 15 per cent. solution.

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* *Ind. Pract.*, January, 1885.

† *Med. Pract.* June, 1885.

‡ *B. D. A.*, January, 1886.

* *B. M. J.*, February, 1886.

Results.—In all cases, the extraction, which was usually performed by him in ten minutes after injection, was *absolutely without pain.* No unpleasant accessory effects were observed, except some nausea and heaviness of head in young girls and children.

Mr. W. J. Marson* reports most satisfactory results in about 100 cases of extraction; 10 minims of 10 per cent. solution employed, and 5 minims were injected on each side of alveolus. He mentions frequent complaints with patients of having passed a restless night after the operations, and in two cases nausea was noted.

Mr. Truman† reports his results of trial with cocaine in sixteen cases of extraction, in only two or three of which pain was complained of.

In two cases of injection of 1 grain, there was faintness and pallor, with cold perspirations and feeble, hardly perceptible pulse.

In another case, where 1½ grains were injected, the patient felt sick and faint, and seemed bewildered.

M. George Viau‡ records eighty-six cases of use of cocaine with a 2 per cent. solution of carbolic acid. Out of these, thirty were males, and fifty-six females. He employed 5 centigrams (⅚ of a grain) of cocaine. Time between injection and operation, from five to six minutes.

Results.—Neither sex nor age influence the anæsthesia produced. No pain. Never met with constitutional symptoms.

M. Tellschow, in introducing Witzel's method of using cocaine to the Clinic of Dental School of Paris, used 10 centigrams 1⅜ grains). He operated on eight patients with uniform success ; in every case anæsthesia being complete or sufficient.

In two of these patients there were exhibited constitutional disturbances of an alarming nature, and some others felt general malaise of a less marked character, but sufficiently severe to render caution necessary.

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* *B. M.J.*, February, 1886.

‡ St. Thos.'s Hosp. Reports, vol. xv.

† *B. D. A.*, March and April, 1887.

(*To be concluded*).

THE PREPARATION OF ROOT CANALS.*

By Mr. George Seymour.

Mr. President and Gentlemen,

In my few remarks upon the Preparation of Root Canals. I do not propose to discuss the subject of suppurating pulps or alveolar abscess but rather to confine myself strictly to the canals themselves, and I propose to touch upon the following points :—

1. Drilling out the canals where there is a sufficient amount of crown to support a filling.
2. Opening up canals in stumps for pivots or artificial crowns.
3. The casualties which may occur in their process, and their treatment.

Firstly.—When there is a sufficient amount of crown to support a filling. For opening up the canals there is, in my humble opinion, nothing equal to a Gates-Glidden drill in the engine, although considerable care requires to be exercised in its use. It is advisable before using the drill to pass a barbless Donaldson up the canal to its apex; by doingthis we obtain a distinct idea of what direction the root takes. If the canal be straight, we have simply to drill out, using a touch and go movement of the drill. I cannot lay too much stress upon this "*touch and go movement*," for in it lies the secret of success.

We must remember when using these delicate instruments that "a drill that cuts and runs away lives to drill another day." It is advisable to continually withdraw the drill, for by so doing we remove all *debris* and so prevent the Gates-Glidden from getting fixed. The drill must not be pushed up the canal with any force, for if we do use injuidicous pressure, one of two things is likely to happen :—

1. Either the drill may be pushed through the side of the fang into the periodontal membrane,
2. Or it will suddenly stick fast in the constricted portion of the canal and snap off.

A moderately small drill should be used first, and carried right up the canal to the apex. By using a smaller size at first, we reduce the risk of its getting impacted in the constricted portion to a minimum.

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* A paper read before the Student's Society, London Dental Hospital.

We next pass up a larger size, but not taking it quite up to the apex, for we must not forget that the fang is very much smaller at the apex than at the crown, and if we pass up a large drill to the top, we may have the misfortune to go right through the side wall.

When filling canals permanently and where we are going to fill the crown with gold or amalgam, we may fill the apex of the root with Iodoform Wax on cotton wool, place a lawyer of Osteo over this, and then by using an inverted cone undercut the portion of the canal nearest the crown and so obtain a splendid anchorage for our filling.

When preparing upper bicuspids we must remember that the first bicuspid generally possesses two roots, or even three —and the second bicuspid often has two. When the tooth possesses two canals, the pulp chamber presents a dumb-bell shaped appearance. Both canals should be opened up and the constricted portion of the dumb-bell may be slightly enlarged by means of a fissure bur so as to facilitate the removal of all pulp tissue.

In treating upper molars the great bugbear is the posterior buccal canal which is generally exceedingly small and often joins the anterior buccal so that we are apt to get looking for it further back in the cavity unless we bear this in mind. With a good opening into the cavity and a fine barbless Donaldson the posterior root can generally be found, although it does occasionally happen that we find it calcified up.

I now come to dilacerated and twisted roots. These are troublesome cases to deal with. The best thing to do is to clear out as much of the pulp tissue as possible with a barbed Donaldson or better still an Arrington's flexible untempered crotchet hook, then perform Rhizodontropy, cap over the canal with a concavo-convex piece of ferrotype plate and fill. In the case of molars the canals should be made to communicate with one another just below the cap by means of a small fissure bur, so that there will be a free vent for all of them.

The operation of Rhizodontropy, or Rhizodontresis, is a very simple one; and consists in drilling a small hole just above the termination of the enamel, through the root into the pulp canal. After doing this, something should be passed through the foramen, so as to keep it patent until the cavity is filled. Mr. Storer Bennett recommends the use of an ordinary pin, with the pointed portion cut off, as the head of the pin prevents it from going right into the canal, and it does not get in the way of the patient's lips as a broach does.

I now arrive at the second portion of my paper, viz., the preparation of canals in roots for pivots and crowns.

It very often happens that we wish to cut off a broken-down crown and pivot the root; and, when doing this, it is recommended by some operators not to cut the crown off to a level with the gum at once, as by leaving a portion above the gum level we are able to apply the rubber dam, and so work in comfort until the platina tube is nicely packed in with amalgam.

The preparation of roots for pivots, and crowns must be carried out as I have already described. After having drilled out with a large sized Gates-Glidden, we then follow up with a fissure bur, or, better still, with a bur made expressly for the purpose. I beg to submit one for your inspection.

The size of the hole required will in every case depend upon the method used. When using Balkwill's method, we do not require a very large hole, but one of just sufficient size to take the tap which is to cut the thread. If we are going to insert ordinary platinum tube we must make the canal still larger, and there should be several grooves cut with a wheel-bur in the side walls, so as to afford anchorage for the filling material. There are special burs made for this purpose, patterns of which I beg to submit for your inspection. I prefer an ordinary wheel bur.

These grooves should be cut in different situations up the canal, because if a groove is cut all the way round the canal at the same distance from the crown, it is obvious that the root will be unnecessarily weakened at this one place.

I now arrive at the third part of my paper, viz., the casualties which may arise during the preparation of root canals, and their treatment.

The first accident, which I have seen occur many times, and which has really induced me to write this paper, is:

1. Breaking the drill up the canal.

This arises from one of three causes:—

(*a.*) It may be caused by using rusty drills. The shaft of the Gates-Glidden is really quite thin enough as it is, and if it is half eaten through with rust it is evident that it will not take much strain to make it snap off right up the canal.

(*b*) The second cause of fracture is pushing it up too rapidly into the constricted portion of the canal, where it becomes suddenly fixed.

(*c*) The third cause is not having a sufficiently large opening into the cavity, and so trying to work the drill round a corner.

In using drills it is important that a sufficient amount of tissue should be cut away so as to allow the drill to go straight into the canal.

Gentlemen, it is no use to cry over spilt milk, and so supposing this horrible misfortune to have occurred, the question arises, how are we to get the drill out.

Mr. T. G. Read, a student of this Hospital, has lately brought out an ingenious device for extracting broken nerve drills, which he has kindly lent me for your inspection to-night. Its use may be facilitated by drilling round the broken shaft with a fine fissure bur. I have found from practical experience that it will not extract very fine drills, and so have got Messrs. Ash & Sons to make me an instrument more suitable for the purpose, which I beg to submit to you for criticism. Should this plan fail, there are various other methods recommended.

2. Some advise us to attract the drill with a good strong magnet; but this, gentlemen, is only theoretical and not practical, for magnets only act powerfully when close, and even then do not exert sufficient force to withdraw an impacted drill.
3. We may try to entangle it in cotton wool on the end of a broach.
4. Some have suggested making a clovehitch with a piece of silk, passing it over the end and then pulling it out.
5. It is also recommended to rust it out by the application of Iodine, but as far as my very limited experience goes, the Iodine only so much weakens the shaft that it breaks off when touched, and leaves the head up the canal, thus, if anything, making matters worse; because, if we are to get it out at all, it is imperative that it should be removed at once.

If we are unable to remove the drill (and I have mysely spent two hours in fruitless attempts to remove one), the only alternative is to leave it in, and if it causes trouble extract the tooth.

The second accident I have to speak of is:

2. Perforation of the apex of the root.

This may happen when the apical foramen is large, or when a very small drill is used, or when too much *vis a tergo* pushes it through.

The consequence of this will most probably be that septic matter will be carried through with the drill. When this happens the best treatment, in my opinion, is to pump up Carbolic acid by making a piston of some cotton wool on a small broach, and then insert an exceedingly loose dressing of Carbolic and Iodoform. Do not seal up the canal with G.P. but use simply the loose dressing.

We should see our patient next day, if possible; if a great amount of inflammation of the surrounding tissues has taken place, and pus is formed, the question then arises whether or not it is very desirable to keep the tooth. If we decide to give our patient immediate relief we must extract the tooth; but if we wish to preserve the tooth, we must either leave the canal open, or else insert a fresh, very loose dressing and direct patient to foment the part with poppy head fomentation as hot as can be borne.

I remember a patient of my own, where the apex of the root was absorbed, and I had the misfortune, or perhaps I should say, was careless enough, to go through the apex of a left upper lateral. The next day she was unable to see out of her left eye; but by the just-mentioned treatment, the inflammation soon subsided, and she still possesses the tooth.

The third accident is:

3. Perforation of the side wall of the fang, and with it more or less injury of the Periodontal Membrane.

This may happen as the result of

(*a.*) Passing too large a Gates-Glidden up to the apex

(*b.*) Cutting away too much of one side of the root in pivoting

(*c.*) Enlarging the canal too much generally.

(*d.*) And last, but not least, that much-to-be-deprecated practice of working drills round a corner; especially when there is too much injudicious force employed to make them go up.

I submit for your inspection, gentlemen, two cases of perforation of the side wall, one of which was caused by too much force in sending the drill up; the other, which is a pivot case, was caused by cutting away too much of the side wall. The last is somewhat interesting, as several dressings were passed up the tube into the dental ligament, and at last produced so much irritation that it was thought advisable to extract the root.

The symptoms of perforation of the side wall are generally well marked. There is pain directly the wall is perforated, and there is generally a copious flow of blood down the canal.

As far as treatment goes, it is, as a rule, a hopeless case; but I think we may try a dressing of Oil of Cloves or Carbolised Oil (1 in 40). If the tissues do not become very greatly inflamed, and the inflammation subsides, treat the root as though nothing had happened. If any evil consequences follow, extract.

This, gentlemen, brings me to the end of my paper; and, in concluding, let me thank you for your kind attention. It now only remains for you to have a good discussion; and I hope you will not be sparing in your criticism, for I am sure we all learn as much, if not more, from a good discussion as from a paper.

THE DENTAL AND ORAL SECTION OF THE INTERNATIONAL MEDICAL CONGRESS.—Dr. Frank Abbott, chairman of the committee on Microscopy of the Section of Dental and Oral Surgery in the International Medical Congress, desires to hear from any one who will exhibit specimens, read papers, or in any way assist in the microscopical department of the Section at the coming Congress. Address him at 22 West 40th Street, New York City.

TO PREVENT THE FORMATION OF BLACK OXIDE IN VULCANISERS.—If a coil of sheet zinc is put into the water in a vulcaniser, it will prevent the formation of much of the black oxide which is found on iron flasks and clamps. After the zinc has been used three or four times, the flasks will soil the fingers but very little when handled.

British Journal of Dental Science.

LONDON, AUGUST 15, 1887.

IMPLANTATION OF TEETH.

In one of those grim periodicals which are devoted to facetiæ, a fair lady patient is depicted, in all the hideous deformity of bad drawing, reposing in a chair and conversing with a portly personage, who is, the narrative tells us, her dentist. The fair patient exclaims " Oh Mr. Blank, these teeth give me such a lot of pain" thereupon the dentist, not unnaturally, succinctly replies " Which teeth, my dear Madam, your teeth or *mine*." Here the joke is supposed to come in, so we never learn the lady's answer. In sober earnest, we are sometimes asked which is better, 'my own grinders or their artificial substitutes,' it is even suggested at times by an impatient client that he should be bereft of all his natural but troublesome teeth, in order to be fitted up with artificial substitutes. Nor is it always an easy problem to solve, whether conservative dentistry does in all cases result in the best state of affairs for the patient. Of course, in these enlightened days it is our duty to save whenever the slightest hope of salvation remains, but when our utmost exertions fail in achieving this saving of nature's denture, we are compelled to ask ourselves how best we may repair the ravages committed by disease.

Dr. Younger of San Francisco, has, as is now well known, advocated a special system of restoration, the main merit of which lies in the fact that the tooth inserted is a human tooth, and becomes, so he believes a physiological part of the individual in whom it is implanted. Transplantation has long been practised and has at some times enjoyed a high repute, while at others it has been decried and pronounced unscientific, its object is of course widely different from that at which we aim when having recourse to implantation. In transplantation we place in the natural normal socket, a tooth taken from another situation, while, when implantation is practised, an artificial socket is made and a tooth either recently extracted, or one, even though removed sometime previously, of which the pericementum retains its vitality, is forced into it. Theoretically, implantation offers special advantages if we may assume that the tooth introduced is a truly vital tissue and one which permits of union between itself and the rawed surfaces of the artificial socket; we have yet to learn how far experience bears out hypothesis.

Dr. Younger's cases have been mostly if not all published, and our contemporary, the *Independent Practitioner*, has been at the painsof watching the progress of these cases. Speaking of these implantations, the editor says "the operations have not proved invariably successful." In one case the tooth implanted had been out of the patient's jaws for some years and had in the interim no care taken to keep it free from dirt. The operation appeared successful at first as the tooth had consolidated. However, after a while it began to loosen and finally fell out. No inflammatory trouble was revealed about the artificial socket. Other cases failed in the same way, at first appearing to be great successes, but sooner or later the teeth loosened and dropped out. Now, although the failure of a few cases cannot be taken as a criterion upon which to base a judgment unfavourable to the operation of implantation, it yet seems to suggest caution and a careful selection of cases. The knowledge we possess of physiology and of the healing of wounds would tend to make one sceptical about the ultimate success of implantation but one genuine successful case is worth more than a thousand *a priori* arguments, so that wise men reserve their decision until a greater weight of evidence has accrued. Still the facts recorded in the cases when failure occurred are very suggestive, and would have to be reconsidered if we find the processes which take place in them, do not also show themselves in a vast majority of instances.

The artificial socket, if cleanly made, is in point of fact a simple incised wound in a highly vascular tissue. The tooth introduced is rendered aseptic and so causes no irritation. The process of repair induces contraction of the tissues around the implanted tooth, keeps it firmly fixed for a time. Subsequently however, the hyperæmic condition passes off, the cicatricial tissue grows more supple and elastic and granulations spring up in immediate relation with the tooth, which in some cases at all events is simply an innocuous but still a foreign body. The granulations in some of the recorded cases, caused a partial absorption of the tooth implanted and in all would tend to loosen it, and as they grew up and the cavity healed, the tooth would become more and more loose, finally dropping out. We admit that such a picture predicates the non-vitality of the tooth, and that the pericemental membrane has not succeeded in supplying the necessary physiological union between the tooth and the artificial socket, but then we are not convinced that such a union has at present been proved and we believe, that only under the most favourable conditions, can teeth maintain their vitality for any long while after severance from their physiological connection. We, in England, have not given Dr. Younger's plan a sufficiently prolonged trial to arrive at the clinical aspects of the method, and so must wait for the further accumulation of facts ; the subject however, is too important to be passed lightly by, but rather demands a thorough, careful and unbiassed discussion. We commend the whole question of Implantation and Replantation to the notice of our Societies as furnishing a very valuable matter, upon which to elicit the opinions of their members.

THE BRITISH DENTAL ASSOCIATION meets on the 18th. A good programme is promised, and will be found elsewhere in the present issue.

EDINBURGH DENTAL HOSPITAL.—The annual meeting of the Edinburgh Dental Hospital and School was held recently, Professor Chiene in the chair. The report submitted showed that the number of students from all parts was fully equal to other years, and was in all respects most satisfactory. The senior prize for hospital work was won by Mr. H. B. Eczard. and the junior prize by Mr. I. D. Cormack. In the systematic courses the prizes taken were: Dental Anatomy and Physiology, Mr. Gordon Shiach; Dental Surgery and Pathology, Mr. H, E. Mahonise; and Dental Mechanics, Mr. Gordon Shiach.

DENTISTRY AT THE AMERICAN EXHIBITION.—Commenting upon S. S. White & Co.'s exhibit of artificial teeth, and other objects connected with the dental art and science, the *Morning Post* says: "The firm of White & Co. supplies almost all the porcelain teeth of the world, as well as an immense number of dental instruments and dentists' chairs. The progress made in this branch of surgery in America during the past 15 years has been very remarkable, and it is greatly to the credit of the scientists of that country that this important branch of surgery should be elevated by them from a mere trade, as it used to be with us, to an absolute science, the importance of which upon the health cannot be over-estimated."

ACTION, WITH VERDICT, AGAINST A DENTIST.—In the Westminster County-court, before Judge Bayley, the case of "Marshall *v.* Paget" was decided. This was an action by Mr. Marshall, a solicitor, of Durham, to recover of Mr. Eskell Paget, a dentist, of 445, Strand, £20 paid for six false teeth.—Mr. Young, who appeared for the plaintiff, said that on the 6th of June the plaintiff went to the defendant's premises to have a tooth extracted. When it was removed, defendant examined his mouth, and said, "You ought to have some false teeth, Mr. Marshall; I can make a splendid job of it for you, and you will bless me for the remainder of your life." He said they would cost £30, and for this six teeth would be ready on the following day. Plaintiff told him he would give £20, and this offer was accepted. He said it was customary for the money to be paid before the work was commenced, and thereupon plaintiff gave him a cheque for £20. Plaintiff was unable to get the teeth on the next day, or on several of the following days, and he ultimately refused to have them, and asked for the return of his £20.—The defendant said he was told not to hurry with the teeth, and as a fact he got them done as quickly as he could. £20 was a reasonable charge.—His Honour gave judgment for the plaintiff for the sum claimed, with costs in the higher scale.

To Expedite the Hardening of Plaster.—Put a drachm or two of sulphate of potash into the water before adding the plaster, and then use in the impression and the cast. It hastens hardening, and prevents expansion.

Ichthyol is prepared from a mineral oil, obtained by distillation of fossil remains, principally of fish ,it has in Germany obtained a high reputation in cases of tic douloureux, neuralgia, rheumatism, etc. According to Dr. Baumann and Dr. Schotten of Berlin the sulpho-ichthyolate of sodium consists of 55 per cent. of carbon, 6 per cent. hydrogen, 15 per cent of sulphur, 7 per cent. of sodium, 15 per cent. of oxygen and possesses a formula of $Na_2 C _{28}H^{36} S_3 O_6$. Ichthyol dissolves in water or in alcohol and ether, it mixes well with vaseline, oil or glycerine. A 25 per cent ointment made up with lanolin and paraffin is a valuable remedy, not only for facial neuralgia but for rheumatic pains, sciatica and lumbago.

Action for Damages by a Dentist. Mr. Boulger of Norwich, has received the award of one thousand pounds from the Great Eastern Railway Company. The Company had made an excavation at East Dereham for the purpose of laying a gas pipe, but had neglected to fill it up properly, whereby Mr. Boulger had a great fall, and so injured his right hand that he has since been unable to follow his profession as a dentist. How often are we impressed with the unwisdom of our present system of cultivating the use of the right hand and allowing the left to grow up in ignorance of what the right hand doeth. This state of affairs is pre-eminently unsatisfactory; we ought to be all ambidextrous.

IS THIS A MISTAKE OR A COINCIDENCE? Our usually very accurate contemporary *The Western Dental Journal* says "Dr. G. Cunningham (Cambridge, Mass.,) says one-half grain dose of cocaine may cause serious systemic effects, and that the addition of a two per cent. carbolic acid solution does not materially alter the effect of the cocaine." Now, curiously enough, Dr. George Cunningham of Cambridge, England, has said just the same thing! We imagine the "Mass" has inadvertently crept in unless indeed Dr. Hungerford has forgotten that we possess a town in England called Cambridge.

IN MENDING PLATES, whether metal or rubber, it is not generally well to bring the crack together. The plate cracked probably because some teeth struck more forcibly than others, and thus were the cause of the spreading afterward. Therefore, either shorten these offending teeth or mend the plate spread as you find it. Sometimes the spreading is caused by the unequal shrinking of the jaw under a temporary set. Then, if the crack is brought together, there must be rubber substituted for the shrinkage, or else the plate must be mended in its spread condition.

TREATMENT OF SORE GUMS.—In the *Deuts. Monats. f. Zahnh.* Al. Chruschtschoff of St. Petersburg, recommends the use of Iodphenolum for the treatment of ulcerative stomatitis.

IODPHENOLUM is prepared by mixing equal parts of tincture of iodine andcrystals of carbolic acid. The affected parts should be wiped with a pellet of cotton, and the bleeding thus produced should be checked by rinsing the mouth with cold water, and after having dried the sore, the remedy should be applied with a camels hair brush protecting it from moisture until the Iodphenolum has become dry. The application may be repeated for the second, third and fourth time, under which treatment the disease generally yields. As a mouth-wash he recommends the use of a solution of carbolic acid (1-1½ per cent.) in water, adding either rose water or peppermint water to flavour, Glycerine also may be used.

THE FOLLOWING FORMULA AS A MOUTH WASH FOR SPONGY GUMS, STOMATITIS, OR AFTER EXTRACTION, will be found valuable.

℞

Resorcin,	ʒ ij
Vol. Ext. Eucalyptus,	ʒ j
Aquam ad	℥ iv

M. Rub up with Magnesium Carbonate ʒ ij and filter.
Sig. One teaspoonful to tumbler of water, to be used frequently.

IN PERICEMENTITIS OR AVEOLAR ABSCSS when sulphide of calcium is used, care should be exercised, as certain idiosyncrasies give evidence of marked eruptive diseases from the action of this drug.

Abstracts of British & Foreign Journals.

WESTERN DENTAL JOURNAL.

REPAIRING GOLD OR SILVER DENTURES.

By W. H. TRUEMAN, D.D.S., in "American System of Dentistry."

BEFORE repairing a case, examine it in the mouth and note the accuracy with which it fits. Patients are unaware there is a change constantly taking place in the form and shape of the surfaces upon which the plates rest. If a plate, worn because the wearer is accustomed to it, although, through absorption of the alveolus, it ceases to fit, is kept out of the mouth a few days while repairs are being made, this and the thorough cleansing that the plate receives during the process of repair, causes the change to be at once noticed. If attention has not been previously called to it even honestly disposed patients are apt to attribute the change to some injury the plate has received during the process of repair. Not only carefully examine the denture in the mouth, but also carefully note its condition, and direct attention to any injury it has received necessitating repairs other than those the patient has desired. There may be injuries of but little importance at the time, yet liable to become serious during the process of repair; for instance, a tooth may be fractured in such a way that its strength is but slightly impaired, during the process of repair it may be still further injured and require removal.

Adding a tooth to a full upper or lower denture, or to a partial denture, when the adjoining teeth are also artificial, is a simple matter. It is well in these cases to inquire into the causes of the accident to the original tooth. It may be that the tooth or teeth have been subject to undue strain; if this is the case, a recurrence of the accident should, if at all possible, be guarded against when making the repairs. The tooth may be made slightly shorter or be set out a trifle, or the backing may be brought quite to the cutting edge so as to take a share of the strain, and thus relieve the tooth, or a little removal from the opposing tooth may be desirable. As the natural teeth wear from the constant use, the manner in which the teeth close becomes changed, and the strain upon the teeth becomes unevenly distributed. This is a frequent and constant cause of teeth being broken from plates. The writer suggests the advisability of always taking an articulation before repairing these cases—simply placing a little wax, not too soft, from the space from which the tooth has been displaced, and requesting the patient to tightly close the teeth, a plaster model being made from this impression in the usual manner.

In some cases it is desirable to rivet the new tooth to the old backing. To do this successfully, the new tooth must be in all essential points a duplicate of the old one and have long pins. After the tooth is sufficiently fitted to allow the pins to rest solidly against the backing, and to determine accurately the position it will occupy, proceed in the following manner to mark and drill the rivet holes in the backing: First, coat very thinly the surface of the backing against which the tooth will rest, with wax, and then carefully press the tooth against it, holding it as nearly as possible in the position it is to occupy. On removing the tooth, the imprint of the pins will be plainly marked on the wax. Then with a sharp drill corresponding in size to the pins, drill the rivet holes at the points indicated; never attempt to make them with the punch; not only is there difficulty with that tool in getting them into the exact position, but there is also a risk of the backing being bent or cracked by the force applied.

When it is difficult to determine its exact position until after the rivet holes are made, in drilling the holes we allow for the change of position of the tooth when it fits closely to the backing; sometimes you must enlarge the holes in the direction required. Do it with a saw sufficiently narrow to pass through the rivet hole; one end of the saw is released from the frame, passed through the hole, readjusted to the frame, and the hole carefully enlarged. A slight change in the position of the tooth may be made by bending its pins. Enlarging the rivet holes should be avoided whenever possible, it always weakens the attachment of the tooth to the backing. The weak point of riveting, especially when the strain to be resisted is in almost direct line with the length of the pin, as is the case with the upper front teeth, is the stretching of the pins; this allows a slight motion of the tooth, and weakens its attachment, not only reducing the caliber of the pins, but also by the wear of the pin, this motion of the tooth permits. Where a tooth is soldered to the backing the pins are not only held more firmly, but the solder taking hold of them quite close to the porcelain, leaves a much smaller portion of its length liable to stretch than when the tooth is riveted.

After the tooth is accurately fitted see that its pins pass through the rivet holes easily and without strain, if the rivet holes are not too close nor too far apart; there is risk of fracturing the tooth. This being done, countersink the rivet holes from the lingual side of the backing, making the countersink cone shape at an angle of about 60°. If too obtuse, either the rivet head or the portion of the backing against which the rivet head rests will be unduly weakened; if the angle is too acute, there is a risk of the head pulling through. The objects of the countersink are: 1st, to shape the head of the rivet so that the tooth will be held firmly to the backing; 2nd, to allow sufficient substance in the rivet head for strength without undue projection beyond the surface of the backing; and 3rd, to reduce the length of that portion of the pin between the porcelain of the tooth and the inner portion of the rivet head, which is liable to stretch.

When ready for riveting, rest the face of the tooth upon a block of lead (a counter die), so that the portion of the tooth immediately under the pins will be solidly supported, interposing a single thickness of paper to prevent the lead marking the tooth, and direct light taps with the blade of a small hammer around the outer edge of the pins so as to thicken them and make them fill the countersink. Avoid striking directly upon the top of the pins until the riveting is nearly complete. It is a great mistake in riveting to direct the blows upon the top of the rivet; when so done, there is not only danger of the rivet bending, but if this is not avoided, the head is forged out thin with weak edges, and covers rather than fills the countersink. Such a rivet never holds firmly, and when the rivet is composed of so soft a material as platinum, is utterly worthless. The blows should be light, not only to avoid undue strain upon the tooth, but also by their repetition to harden the platinum. In cases where the pins of the teeth are not readily accessible, it is necessary to use a straight punch to reach them, resting the face of the punch upon the pin while an assistant strikes the other end with a hammer.

Properly done, riveting gives firm, reliable attachment, but less so than soldering. When undesirable to subject the plate and teeth to the heat necessary in soldering, use thus: a crack may be repaired by riveting a piece of plate over it. Platinum is usually preferred for rivets, being soft when annealed, and hardening under the hammer.

Riveting, although seeming to be very simple, really needs much practice.

In adding to, and repairing artificial dentures, carefully taken models are essential, as carelessness in making a slight repair may ruin an expensive denture. In all cases where a model is required (unless the case is to be refitted), the impression should be taken with the denture in the mouth. In all cases where teeth or clasps are to be added, or a tooth to be replaced adjoining a natural tooth, or resting on the gum or fitting over a root, or where the plate is to be attached, place the plate in position in the mouth and with a spatula, aided by a lock cotton held in the tweezers, build plaster, moderately stiff, over those portions of the gums and teeth of which a model is required, extending it somewhat beyond the parts immediately concerned and over the plate to such an extent that the plate and impression can be accurately adjusted to each other after their removal from the mouth.

In all cases where actual separation of the parts has taken place, and the slightest doubt exists about their active readjustment, place them in position in the mouth, build plaster over and around them, so as to hold them securely in position, and after removal from the mouth, place them in the investment for soldering at once.

In simple cases of adding new plate surface where only one or two teeth are involved, it is seldom necessary to make a die and swage the added plate. It can usually be bent to fit with sufficient accuracy with the pliers; or a piece of very thin platinum may be burnished to fit the model accurately, and sufficient plate, either gold or silver, be added at the time it is soldered, to give the required stiffness. When a die is required, first trim the edge to which the addition is to be joined, file it to a feather edge, and make it fit closely to the model; secure the denture to the model while making the die, the die produced being a fac-simile of the model with the denture in position.

In some cases it is better to solder the addition to the denture before fitting teeth; in others, the teeth and plate can be soldered at the same time. Avoid the second soldering.

The additional risk in soldering teeth that have been worn, is supposed to be due to the presence of fatty matter and moisture absorbed from the mouth; which substances when heat is applied, vaporise and expand, evolving steam and gases more rapidly than they can escape. Baking or thoroughly drying the case in a sand bath, so as to gradually drive off the gases, has been recommended. If the case is invested in plaster and sand in proportion, and in the manner recommended for the new work, and the mass is slowly heated in a furnace or over a gas flame to nearly the heat required for soldering, the above mentioned cause is very slight. In soldering, the risk of fracturing the teeth from repairing cases always make them sufficiently hot to thoroughly burn off the discolourations which usually appear upon the surface of the teeth when the heat is first applied.

Cases where the plate is cracked frequently come to us with the crack wide open. As a rule it is better to leave it so. The crack is often caused by a change in the form of the mouth, subjecting that portion of the plate to undue strain, and the plate therefore usually fits better as it comes from the patient's mouth. Never depend upon solder alone when repairing a crack ; in all cases lay a piece of plate over it.

MANAGEMENT OF CHILDREN'S TEETH

By J. E. Cravens, D.D.S., Indianapolis, Ind.

Children under three years of age are not brought to the dentist, they are taken to the family physician.

When the dentist is called into consultation on these it is his duty to remember the importance of retaining deciduous teeth in the head as long as possible.

There are several reasons why the deciduous teeth should be retained until their successors are ready to erupt.

The deciduous teeth are always regular in arrangement, showing them to be in no wise accidental.

These teeth erupt in groups, and the presence of the several groups furnishes an index, by which may be determined the approximate age of the individual, the stage of development of certain hidden organs, particularly the stomach and indicates fairly the character of food demanded for the further development of the individual. The index thus provided is lucid enough to be consulted with profit by any intelligent, observing dentist.

In adult subjects the masseters are the strongest pair of muscles in the body, being capable of maintaining the suspended weight of the body, and often more; but in childhood the masseters do not possess this proportionate strength, so that often the mastication of solid or fibrous food would be extremely difficult if not impossible for the young subject were it not for the fact that these teeth bear peculiarly sharp cusps for the quick and easy mastication of substances that otherwise would necessarily be bolted whole and uninsalivated into the stomach.

This facility of deciduous teeth for chopping the food meets the demand of stomachs of very limited digestive capability. In this respect the deciduous teeth that have been freshly erupted, present some analogy to the third stage of mechanical abrasion common to the advanced age of the human subject that has been characterised as second childhood, and in which the sharp edges of the abraded teeth enable the aged individual to comminute his food.

The spines on the freshly erupted cutting edge of a baby's incisors possess wonderful penetrating power, but as the individual grows stronger, power comes to the masseters and the spines are soon worn away, leaving a plain incisive edge that is better adapted to the habits of the developing individual. The adult teeth are from one-third to one-half larger than the deciduous ones, requiring about double the capacity of alveolar arch, which the child's jaw must grow to accommodate. This additional development of the alveolar arch is usually accomplished in six years, beginning at about the sixth year. We sometimes find the inferior adult centrals, at six years, coming through the gum behind the deciduous incisors and obstructing the movements of the tongue. Six months later the inferior laterals emerge so far back and cramped for space and position as to *appear* to be hopelessly shut out of the arch.

Mistakes are often made by dentists in the management of teeth at this period by prematurely extracting deciduous incisors. So long as deciduous teeth remain and in healthy condition, the arch may be expected to expand, at least until the requisite space for the accommodation of the adult teeth has been attained. The deciduous crowns and roots seem to serve as levers and wedges by which the jaw is induced to expand at the desired points. The tongue possibly is an active factor in rendering the leverage effective. Again, deciduous teeth as long as space is needed, because the resorption of their roots is attended by a mild form of local inflammation and increased vascularity, resulting in increased vascularity, resulting in increased nurtrition of the jaw, and consequent enlargement of the alveolar arch for the accommodation of adult teeth. When it is possible to do so, all cavities in deciduous teeth should be filled, otherwise they may become so extensively decayed as to necessitate extraction. Pulpless deciduous teeth should be retained, if possible, under conditions that may not prevent resorption of their roots, so that they may assist in inducing enlargement of the alveolar arch.

The deciduous molars should be retained for good mechanical reasons. They prevent a forward tipping of the sixth year molars, particularly of the lower ones, thus preserving proper space for their immediate successors, the bicuspids. Also, they are necessary to preserve articular surfaces for the effective mastication of food. Good masticating ability is quite as essential for the child as for the adult.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

A NEW SUCTION VALVE.

By C. G. Knight, D.D.S., Southsea.

THE new suction valve, as will be seen by the drawings Figs. 1 and 2, consist of two saucer-shaped halves containing a spring and disc. Fig. 1 is a sectional view of the complete valve enlarged to twice its size. Fig. 2 is a view of the lingual surface, the actual size of valve.

In the centre of the lower half is an aperture, Fig. D., communicating with the air chamber in the denture, and at equal distances round the rim are six small lugs, as shown in Fig. 2. Three of these are used for retaining the lower half of the valve in the denture, the remaining three serve to secure the upper to the lower half. In the centre of the upper half is an aperture A, covered with fine gauze to prevent food or other matter entering the interior of the valve. The internal parts consist of a disc, Fig. G., and a spiral spring, Fig. B. The disc is manufactured from the operculum of any suitable mollusca. The spiral spring is made of hardened wire. When adjusted, the action of the valve is as follows :—

The disc C rests upon the aperture D, and is kept in position by the spring B, the spring being retained in position " by the upper half of the valve," and so adjusted that by sucking with the tongue against the lingual aperture, the disc is readily lifted and the air exhausted from the chamber in the denture, through the small orifice in the lower half of the valve, and a perfect vacuum thereby obtained, the result being that the adhesion of the denture to the palate is perfect.

The following are the special features claimed by the inventor of the new valve :—

1st. Certainty of action through the spring pressing the disc upon the orifice leading to the air chamber, immediately on the removal of the tongue from the lingual surface of the valve, after exhausting the air.

2nd. Imperishable nature of the several parts. The outer case, and the spring consisting of metal, and the disc being made from the operculum of any suitable mollusca, is particularly impervious to the fluids of the mouth, and does not warp out of shape, as Indiarubber or leather does.

3rd. The acting or moveable parts being all enclosed and protected by the outer case, effectually prevents their disarrangement or loss.

4th. From a cleanly point, the inventor thinks it cannot be surpassed, the orifice on the exposed lingual surface of the valve being protected by very fine gauze, effectually prevents the admission of all matter, except air or liquids.

And for size and compactness it is, believed, to be the smallest dental suction valve yet invented.

Explanation of drawings.

Fig. I.

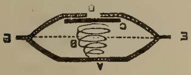


Fig. 2.

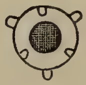


Fig. 1 Is a sectional view of the complete valve.

Fig. A. Is the orifice "covered with gauze," in upper half or lingulal surface.

" B. Is the spiral spring.

" C. The disc.

" D. The orifice in the lower half, leading to the air chamber in the denture.

Fig. E. Two of the lugs for retaining the lower half of the valve in vulcanite dentures.

Dental News.

THE QUEEN (ON THE PROSECUTION OF H. F. PARTRIDGE) *v.* THE GENERAL MEDICAL COUNCIL OF THE UNITED KINGDOM.

In the Court of Appeal, before the Master of the Rolls and Lords Justices Lindley and Lopes, the appeal of the defendants in this case came on for hearing. The plaintiff in the action was Mr. Henry Francis Partridge, a dentist, who had been removed by the General Medical Council of Medical Education, the governing body for the United Kingdom, under an Act passed in the year 1858, from the Dentists'

Register. Mr. Partridge had been practising in London, at Kensington, since 1867, as a dentist. By an Act passed in the year 1878, known as the Dentists' Act, it was provided that the General Medical Council should have charge of a Dentists' Register—that was, the names, certificates, and addresses of certain classes of persons holding diplomas from one of the licensing bodies. In the year 1878 Mr. Partridge was placed on the Dentists' Register, in virtue of a diploma issued to him by the Royal College of Surgeons in Ireland in 1885, the Royal College of Surgeons in Ireland, cancelled the diploma of Mr. Partridge. The ground for the cancellation was the alleged fact that Mr. Partridge had violated the pledge or declaration that he made when he obtained his diploma from the Royal College of Surgeons in Ireland, to the effect that he would not seek to obtain business by advertising, and that was the violation of which the Royal College of Surgeons of Ireland had taken notice, and on account of which they had deprived the plaintiff of his diploma. After this action of the Royal College of Surgeons in Ireland, the General Medical Council removed Mr. Partridge's name from the Dentists' Register. The question for the Court was whether the General Medical Council were justified or not in thus removing Mr. Partridge's name from the Register. In the court below, consisting of Mr. Justice A. L. Smith, a mandamus was granted to restore the prosecutor's name to the Dentists' Register, and it was from this decision that the General Medical Council now appealed.

Mr. Kennedy, Q.C., and Mr. M. Mackenzie appeared for the appellants; and Mr. Finlay, Q.C., and Mr. Lyon for the respondent.

Mr. Kennedy, in the course of his argument, said that in the court below, Mr. Finlay succeeded in inducing their lordships to hold that Mr. Partridge could not be legally removed from the Dentists' Register. The court below held that the plaintiff was on the Register in accordance with the provisions of the Act of 41 and 42 Vic., chap. 33, and that the pledge as to advertising, which the plaintiff gave and violated, did not bring him under the Act alone under which he was authorised to pursue the business of a dentist. The Registrar of the Royal College of Surgeons in Dublin, Mr. Brennan, had intimated to the General Medical Council that Mr. Partridge had violated his pledge, and that, in consequence, his diploma had been cancelled. Mr. Partridge did not deny the facts. He simply applied for a *mandamus* to have his name reinstated on the Dentists' Register. It was most essential for the protection of the public that the Register should be reliable. The question raised by this appeal was a very important one. If this court upheld the decision of the Divisional Court it would be a very serious matter, because then the Dentists Register would be a false record.

Mr. M. Mackenzie followed on the same side.

The Master of the Rolls proceeded to give judgment without calling on the learned counsel for the respondent. He said the question for the court was—What was the qualification of a person entitled to appear on the Dentists' Register under the Act Vict. 41 and 42, chap. 33, section 6? In his opinion, the register of the name of the licentiate was sufficient once for all, and when once a name appeared on the Register it could not be removed or erased except in case of death, or in case it was being fraudulently made. In case a person had been convicted of a felony or of a misdemeanour, or had been found guilty of infamous or disgraceful conduct, the General Council would have power to erase his name after it had been proved that a person on the Register had so offended. Upon a true construction of the Act of 1878 the Royal College of Surgeons in Ireland, could strike Mr. Partridge off their own list, but this would not authorise the General Council to strike him off the Dentists' Register; but whether the General Council thought that this conduct had been disgraceful in breaking the solemn undertaking which he had given, and in persistently breaking it, he presumed that they would exercise their judicial function under section 13 and 15 of the Act of 1878. They could erase his name for disgraceful conduct under section 15, but in order to do this, they must exercise their judicial authority. That, he thought, was what the General Council wanted to know, and now they had the decision of the Court of Appeal, for he believed that he had spoken the opinion of his learned brethren, the *mandamus* was rightly issued upon the view of things which had been placed before the court below, but because the court refused to allow the appeal, that would not take away the right of the General Council to erase the name of the prosecutor under other sections. The appeal would be disallowed with costs.

Lord Justice Lindley said he took the same view of the law as the Master of the Rolls. It was quite clear that the name of Mr. Partridge could not be erased under Section 6 of the Act 1878; but if the General Council, after hearing and determining the matter, were of opinion that Mr. Partridge had been guilty of disgraceful conduct in violating his undertaking, then they could erase his name.

Lord Justice Lopes, in concurring, took a similar view.

The appeal was therefore dismissed, with costs.

THE CENTRAL COUNTIES BRANCH OF THE BRITISH DENTAL ASSOCIATION.—MEETING AT SHREWSBURY.

The annual meeting of the Central Counties Branch of the British Dental Association was held at the Raven Hotel, Shrewsbury, and among the large number of professional gentlemen present, were—Mr. Breward Neale (president for the year just ending). Mr. W. E. Harding (Shrewsbury, President elect). Mr. Roff King (Shrewsbury), Mr. J. Humphreys (hon secretary), &c.—The Treasurer's report showed that there was a small balance in hand, and out of this it was agreed, on the suggestion of the president, to give a subscription to the Birmingham Dental Hospital, where meetings of the society are held and every convenience afforded.—Mr. Harding proposed that Mr. Charles Sims, of Birmingham, be elected President of the Central Counties Branch, it being explained that it was very desirable to have a Birmingham man next year, as the next annual meeting of the branch would no doubt be held in that town in conjunction with that of the British Dental Association.—This was seconded by Mr. Grant, and carried unanimously; and the treasurer and honorary secretary were re-elected.—Some other appointments were made, and vacancies filled up in the Council.—It was formally proposed and agreed to, on the motion of Mr. Harding, seconded by Mr. Roff King, that the next annual meeting be held at Birmingham, in August, the arrangements to be made by the Council.—Some alterations were then approved of in the by-laws, and the President proceeded to deliver his farewell address. He thanked them all for the kindness and consideration he had received at their hands during his year of office, and he especially thanked those who had read papers and those who had joined in the discussion of them, for without a good discussion the chief value of a paper was often lost. It was very satisfactory to know that they had had some good papers read, and that the subjects had been thoroughly well thrashed out, the opinions elicited of really practical men. No man worthy of the name of a dentist had a right to keep to himself and from the knowledge of his fellow practitioners information which would be to their benefit, and of course, to that of the public at large. The men most successful in the profession were always the men who most regularly attended the meetings and were most ready to impart the knowledge they possessed to others. (Applause.)—Mr. E. Harding, the president elect, then took the chair, and delivered his inaugural address.—A vote of thanks to the President was passed for the address, and the members then partook of luncheon at the invitation of Mr. Roff King and the president. Subsequently there were demonstrations of a practical character, and in the afternoon an excursion to Haughmond Abbey.—The annual dinner subsequently took place at the same hotel. The chair was occupied by the president (Mr. Harding). and the vice-chair by Mr. Sims.

BRITISH DENTAL ASSOCIATION.

The Annual General Meeting will be held in the Hall of the Faculty of Physicians and Surgeons, 242, St. Vincent Square, Glasgow, on Thursday, Friday, and Saturday, August the 18th, 19th, and 20th, 1887.

Order of Proceedings.

Thursday, August 28th.

Meeting of the Representative Board.

The Annual Meeting for business.

Sir Edwin Saunders will deliver his valedictory address.

Mr. J. B. Brownlie will take the chair and deliver an address.

List of Papers Promised.

"On the Water Pressure to be obtained in all towns in Great Britain and Ireland of above 10,000 inhabitants, with remarks in reference to the use of Hastie Motor in Workrooms and Surgeries," by Walter Campbell, Esq., L.D.S. Eng.

"On a More Efficient Method of Conferring Dental Appointments," by Gordon Jones, Esq., L.D.S.I.

"On the Dental Aspect of Public Health," with a view to a discussion on the progress of the question raised by W. M. Fisher, Esq., L.D.S. Eng., and George Cunningham, Esq., L.D.S. Eng., D.M.D. Harvard.

"On the Mechanical Training of the Dental Student," by George Cunningham, Esq., L.D.S. Eng., D.M.D. Harvard.

"On the Value of Antiseptics in Dental Surgery," by E.

Lloyd Williams, Esq., M.R.C.S., L.R.C.P. Lond., L.S.A., L.D.S Eng.

"On the Application of Electricity to Dental Uses," by A. Kirby, Esq., L.D.S. Eng.

Friday, August 19*th.*

The Annual Meeting of the Dental Benevolent Fund in the Hall of the Faculty of Physicians and Surgeons, Glasgow.

Demonstration and Exhibition of Instruments in the Dental Hospital of Glasgow.

he Annual Dinner.

DEMONSTRATIONS PROMISED.

By James Cumming, Esq., L.D.S. Glasgow, new method of "Continuous Gum Work with any Form and Make of Tooth."

By A. Kirby, Esq., L.D.S. Eng., "Electric Mallet and Engine."

By Gordon Jones, Esq., L.D.S.I., "The Treatment of Abscessed Teeth, and their ultimate healthy retention in the jaw. To be demonstrated in the different stages on a number of patients.

By A. Howarth, Esq., L.D.S. Eng., "New Articulator."

PASS LIST OF THE FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

AT the July sittings of the Examiners, Mr. William Hutchison, Glasgow, passed the first dental examination; and Mr. John G. Wallis, Hull, and Mr. William T. Madin, Birmingham, passed the final examination, and were admitted licentiates in dental surgery.

HOSPITAL REPORTS.

MONTHLY STATEMENT of operations performed at the London Dental Hospital, Leicester Square, from 1st July to 31st July, 1887 :—

Number of Patients attended		2613
Extractions	Children under 14	402
	Adults	1106
	Under Nitrous Oxide	689

Gold Stoppings	308
Other Stoppings	892
Advice and Scaling	229
Irregularities of the Teeth	132
Miscellaneous and Dressings	444
Total	4202

Herbert Williams, L.D.S.,
House Surgeon.

Work done at the Victoria Dental Hospital of Manchester, during the month of July, 1887 :—

Number of Patients attended		856
Extractions	Children under 14	590
	Adults	
	Under Nitrous Oxide	80
Gold Stoppings		37
Other Stoppings		78
Miscellaneous		340
Total		1125

Henry J. Moore,
House Surgeon.

Statement of operations performed at the National Dental Hospital, during the month of May, 1887 :—

Number of Patients attended		2066
Extractions	Children under 14	372
	Adults	807
	Under Nitrous Oxide	547
Gold Stoppings		161
Other Stoppings		581
Advice and Scaling		503
Irregularities of the Teeth		211
Miscellaneous		337
Total		3518

C. A. Pattinson,
House Suryeon.

Statement of operations performed at the National Dental Hospital, during the month of June, 1887 :—

Number of Patients attended	1740

Extractions	Children under 14	353
	Adults	897
	Under Nitrous Oxide	561
Gold Stoppings		114
Other Stoppings		537
Advice and Scaling		482
Irregularities of the Teeth		238
Miscellaneous		298
Total		3472

A. C. Pattinson,
House Surgeon.

Statement of operations performed at the National Dental Hospital, during the month of July, 1887 :—

Number of Patients attended		1466
Extractions	Children under 14	314
	Adults	784
	Under Nitrous Oxide	556
Gold Stoppings		87
Other Stoppings		560
Adice and Scaling		234
Irregularities of the Teeth		368
Miscellaneous		381
Total		3284

C. A. Pattinson,
House Surgeon.

Communications have been received from—

Mr. Pattinson, London; Mr. Herbert Williams, London; Mr. Smale, London; Mr Knight, Swansea, Secretary of the Faculty of Surgeons and Physicians. Glasgow; Mr. Walter Campbell, Dundee; Mr. H. J. Moore, Manchester.

BOOKS AND JOURNALS RECEIVED :—

Deutsche Medizinal Zeetung, Australasian, British Medical Journal, Chemist and Druggist, Independent Practitioner, Dental Cosmos, Dental Review, Western Dental Journal, Dental Record (London), L'Art Dentaire, L'Odontologia, Monalschrifft f Zahnheilkunde, Gioruali di Correspondenza pei Deutists, Le Progrés Dentaire, Archives of Dentistry, Items of Interest, Glasgow Medical Journal, Southern Dental Journal.

British Journal of Dental Science.

No. 471. LONDON SEPTEMBER 1, 1887 Vol. XXX.

LECTURES ON DISEASES OF THE JAWS.

By CHRISTOPHER HEATH, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

(*continued from page* 767)

LECTURE II.—TUMOURS OF THE JAWS.

Sarcomatous Tumours.—Under the term sarcoma, modern pathologists include all tumours composed of tissue, which is either purely embryonic, or is undergoing one of the primary modifications seen in the development of adult connective tissue (Erichsen).

In connection with the jaws, various forms of sarcoma are found, many of which have hitherto been known by other names, and many recurrent growths formerly called cancers come properly into this class.

The spindle-celled sarcoma is of frequent occurrence in the upper jaw, forming many of the specimens formerly indiscriminately named "osteo-sarcoma." It is usually of a yellower colour than the fibrous tumour, and of softer consistence, and on section it exudes a serous fluid. The spindle-shaped cells are often of great length and size, and each cell contains one or more oval nuclei, the intercellular substance being homogeneous.

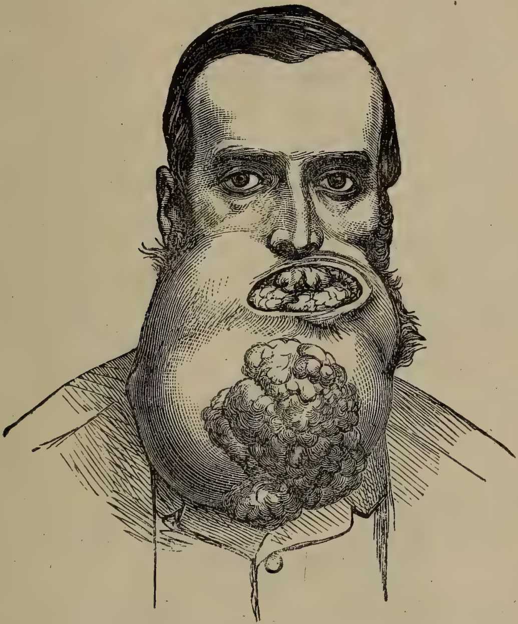
Under the name of "albuminous sarcoma," Mr. Liston has described a case which appears to be of this kind, in the *Lancet*, November 26th, 1836, which proved fatal after removal of the tumour. The patient was 24 years of age, and the disease appeared to have originated in a blow, and grew with tolerable rapidity. The tumour, which is preserved in the College of Surgeons' Museum (2202), is oval in form, its chief diameters being about two three inches by inches, and contained spaces in which was a glairy fluid, coagulable by heat.

Spindle-celled Sarcoma frequently attacks the lower jaw, and may prove fatal, by obstruction either to respiration or deglutition, if allowed to grow unchecked for many years. Some of the earliest removals of portions of the lower jaw were for growths of this description which had attained a large size, and the names of Crampton, Cusack, and Syme are connected with these operations. The Museum of the College of Surgeons of Ireland is especially rich in tumours of this class, and possesses also a cast of the head of a patient who died with a large tumour of the lower jaw, which has been injected and divided.

The spindle-celled sarcoma will, if its surface be irritated by caustics, etc., throw out fungous masses, which bleed, and may be mistaken for malignant fungus. Mr. Cusack (*loc. cit.*) gives an example of this result occurring from sloughing of the skin of the face, due to over-distension by the tumour and I had under my care some years back an extraordinary instance of the kind, where quack applications had produced similar results. Occasional hæmorrhage from such surfaces led to these cases being massed together with cancer as examples of *fungus hæmatodes,* and doubtless Sir William Fergusson's observation is correct, that the rarity of fungus hæmotodes in the present day, is due to the early treatment to which cases of this kind are submitted.

The portrait of the patient formerly under my own care, to whom I have alluded, is shown in Fig. 14, taken from a photograph. The enormous size of the tumour can be best appreciated by the figure, the measurements being as follows: from the lobule of one ear round the chin to the lobule of the other was 19½ inches; from the edge of the lower lip over the chin to the *pomum Adami,* 13 inches; and the width of the face was 14 inches. The circumference of the lips was 9½ inches. The patient was only 32, and the disease appeared to have commenced eleven years before in a swelling below the right canine tooth, but the whole of the large growth had taken place within four or five years. The fungus protrusions were, as has been mentioned, the result of the application of quack remedies. The patient, when he came under my notice, was in a miserable condition, being nearly starved, owing to the tumour forming a projecting mass within the mouth, which completely concealed the tongue, and was nearly in contact with the palate. I succeeded in removing the tumour by sawing in front of the left angle and disarticulating on the right side, with very little loss of blood; but the patient died exhausted on the sixth day. The tumour weighed 4 lb. 6 oz., and is now in the Museum of the College of Surgeons (2234). A section has been made to show its structure, which is precisely that described by Sir P. Crampton, the mass being made up of fibro-cellular tissue of different degrees of density, with here and there small nodules of bone, and a few small cysts interspersed through its structure. The tumour evidently commenced in the interior of the jaw, the outer plate being considerably expanded and destroyed in parts, while the inner remains

Fig. 14.



perfect, and can be seen in the condition in which it was left at the operation. The mass, in growing, has carried up the teeth with it; and they project from it at irregular intervals, a considerable portion of the growth, and probably the most recently formed part, being posterior to them, occupying as it did the mouth, and lying among the muscles beneath the tongue. The fungoid masses are covered with granulations, but otherwise differ in no way from the rest of the growth.

Mr. Eve has recently re-examined this tumour, and has found scattered throughout it masses and cylinders of epithelial cells, resembling the epithelial elements of the cystic tumours of the lower jaw described in my first lecture. They were composed of large irregularly shaped or branched masses, and of small columns composed of round epithelial cells, with a layer of peripheral elongated cells. (For drawing, see lecture by Mr. Eve, *British Medical Journal*, Jan. 6, 1883.)

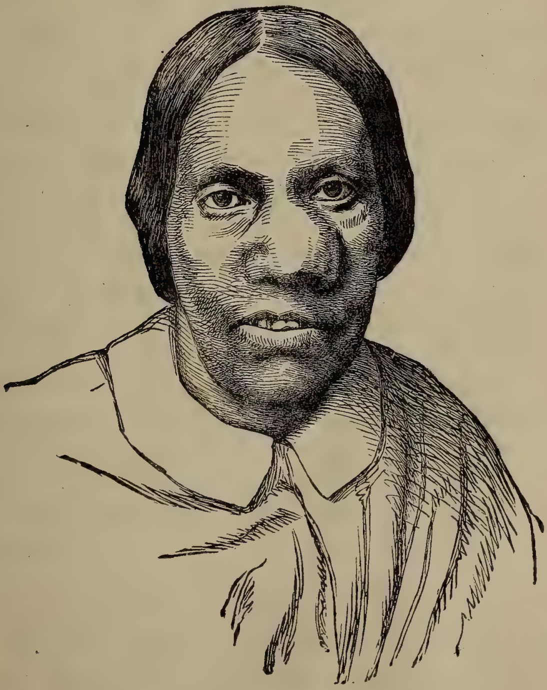
Under the head of Spindle-celled Sarcoma must be included the cases which have hitherto been classed as "recurrent fibroid," of which Mr. Lawson's is a good example. The preparation is in the College Museum (2230 A.)

Myeloid Sarcoma is found in the upper as well as in the lower jaw, in which latter position the specimen first described by Sir J. Paget arose. The occurrence of myeloid cells in specimens of epulis has been already referred to, and it might naturally be expected, therefore, that the same characters might be discovered in tumours of the jaw. In fact, Dr. Eugène Nélaton, in a valuable treatise published in 1860, *Des Tumeurs à Myéloplaxes*, says "le siége d'élection des tumeurs à myéloplaxes est, sans contredit, dans les os maxillaires, particulièrement au niveau de leur bord alvéolaire," and supports his statement by quoting twenty-nine cases of the disease in this situation.

The diagnosis of myeloid tumours of the jaw is by no means easy, since the bone is slowly expanded, much as it would be by a cyst or by any benign tumour. If the disease originate on the exterior of the bone, or, when springing from the interior, if sufficient absorption of the bone have taken place to allow the tumour to appear beneath the mucous membrane, the characteristic dark maroon colour of the tumour may be perceived. Cysts occasionally form in the substance of a myeloid tumour, and an exploratory puncture of these may yield fluid in which the characteristic myeloid cells may be discovered microscopically.

Myeloid disease occurs mostly before the age of 25. Sir J. Paget (*Surgical Pathology*, page 524) quotes two cases of Sir William Lawrence's, occurring in the upper jaws of women of 21 and 22 years of age, the latter of which illustrates extremely well the recurrence of myeloid growths (of which there can be no question), and also the very curious fact that a tumour on the opposite side to that removed, and which presented appearances exactly correspond-

Fig. 15.



ing to it, spontaneously subsided. The specimen is in St. Bartholomew's Hospital Museum (1. 459).

Fig. 15 shows a patient from whom Mr. Canton removed a myeloid tumour in 1864. She was 35 years old, and the tumour appeared to have followed a blow. It had been twice removed before she came under Mr. Canton's care, and that gentleman successfully removed the left superior maxilla with the tumour, a portion of which hung down into the pharynx.

The subsequent history of this patient is given as follows in the *Lancet* of January 26, 1872, and it is remarkable that the tumour on one side should have had a character differing from that on the other: "In June, 1871, she again presented herself at the Charing Cross Hospital with a large tumour filling up the antrum of the right upper maxilla, and extending forwards, causing a projection of the upper lip. Mr. Canton accordingly removed the remaining upper maxilla. The operation was perfectly successful, and presented in itself no points of particular interest. The edges of the incision were brought together with silver sutures, and no dressing of any kind was used, the mouth being simply kept perfectly clean and sweet by the frequent use of Condy's fluid. Within a week of the operation she left her bed, and within three weeks she was discharged from the hospital. Five months later the patient wrote to say that she had enjoyed perfect health since she had left the hospital. On microscopic examination the tumour proved to be simply fibrous. It had been growing for a year before removal. Notwithstanding that a great part of the framework of the face had been taken away, and that a portion of the orbital plate was removed at both operations, there was remarkably little deformity of the face. The patient had lost all power of muscular expression, but beyond this there was nothing to attract attention, except a slight falling in of the upper lip on the right side. There was no falling in of the nose, the raphe of what was the roof of the mouth deriving great support from a firm pseudo-palate, which had formed of cicatricial tissue after the first operation. The cicatrices of the incisions were scarcely noticeable, as they followed the natural lines of the face."

In the Museum of the College of Surgeons are two specimens (2245 and A), the two superior maxillæ of a woman aged 21, which were given me by Messrs. Andrews and Coates, of Salisbury, who removed them. The left upper jaw has been macerated, showing a calcified tumour springing from the anterior part ; the right jaw has a growth involving the anterior portion extending into the nasal fossa. The growth in these cases was regarded by the operators as an example of scirrhus, but I am enabled, by the kindness of Dr. Lush, of Weymouth, to correct this statement, by a record which he has of the microscopic details observed when the tumours were recent, showing the growths to have been really myeloid.

Myeloid Sarcoma is frequently met with in the lower jaw, and it was here that the disease occurred in the case from which Sir J. Paget drew his description. The case is quoted by Mr. Stanley as an example of "tumour of bone, composed of a soft, very vascular substance, having the characters of erectile tissue," but his general description corresponds precisely to that of Sir J. Paget. Figs. 1 and 2 of Plate 13 in Mr. Stanley's atlas show the tumour *in situ* and a section of the jaw after removal. "The patient was a boy in St. Bartholomew's Hospital, and the growth occupied the symphysis of the lower jaw, and protruding into the mouth, presented a very vascular surface of a mottled red and purple colour, resembling the exterior of some nævi. The tumour was not tender to the touch, and had not been accompanied by pain ; it was once destroyed by caustic to the level of the alveolar border of the jaw, but was quickly reproduced; it was then wholly removed with the portion of the jaw in which it originated, and the cure was permanent. The morbid substance was found imbedded in the cancellous texture of the jaw ; it was soft, of a dark-red colour, closely resembling the tissue of healthy spleen." (Stanley, *On Diseases of Bone*, p. 185).

A valuable preparation is in the College of Surgeons Museum (421 A), of myeloid tumour of the symphysis and body of the jaw, removed by Mr. Craven, of Hull, from a young woman of 18, who made a good recovery after the operation. Figs. 16 and 17 show very satisfactorily the appearance of the specimen, which has been divided horizontally. The tumour was of between two and three years' growth, and was covered with healthy mucous membrane. Its section shows a well-marked specimen of myeloid disease imbedded between the plates of the lower jaw; its tissue is of the ordinary friable character, resembling spleen, but somewhat decolorised by immersion in spirit, and it is intersected by fibrous septa. Two cysts may be seen in the section; these being of frequent occurrence in myeloid growths. The microscopic examination of Mr. Craven's

Fig. 16.

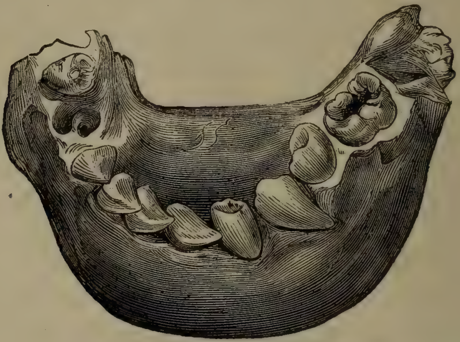
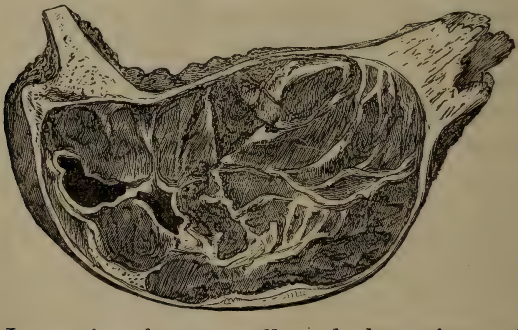


Fig. 17.

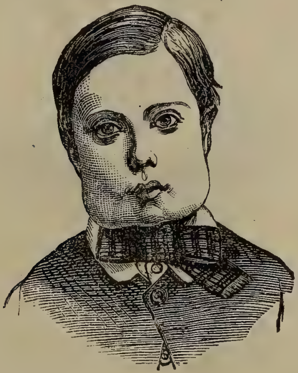


specimen was unsatisfactory, owing to its previous immersion in spirit, but there can be no question, from the naked-eye appearances, of the nature of the growth.

In the Museum of St. George's Hospital are four specimens of myeloid disease affecting the lower jaw (II. 166, 167, 168, 169), two of which have no history; the others were removed from girls of 8 and 5 years respectively, of whom the first was known to be well two and a-half years afterwards. In the Museum of University College are three excellent specimens, removed by Liston (680, 1, 2), and there are three in St. Bartholomew's Hospital, all from young persons.

A remarkable, and I believe unique, example of disease of both sides of the lower jaw, the microscopic characters of which were decidedly myeloid, was formerly under my own care, of which the following are the brief particulars:—The patient, a boy of 7½ years, whose portrait is shown in Fig. 18, presented a remarkable enlargement of both sides of the lower jaw, giving his face a very square appearance. The affection had come on gradually and painlessly from the age of a year and a-half, and at the time I operated upon him the width of the jaw, as measured with calipers, was five inches, the width of an average adult jaw being only four inches. The growths were evidently projections from the outer surfaces of the angles of the jaws, the inner surface of the bone being

Fig. 18.



natural, and the mucous membrane of the mouth not interfered with. In September and October, 1867, I removed the right and afterwards the left tumour through incisions behind the margin of the jaw, and without opening into the mouth. The main part of each projection was sawn off the jaw, and are now in the College of Surgeons' Museum (2232), closely resembling large mussel-shells filled with a cartilaginous-looking substance, which, however (and especially some darker portions), gave distinct microscopic evidence of myeloid structure. A good deal of this material, which seemed to fill the interior of the bone, was gouged away, and the symmetry of the face restored as far as possible. The boy made a good recovery, and Fig. 19, from a photograph, shows his condition three months after the second operation, and there appears to have been no tendency to recurrence.

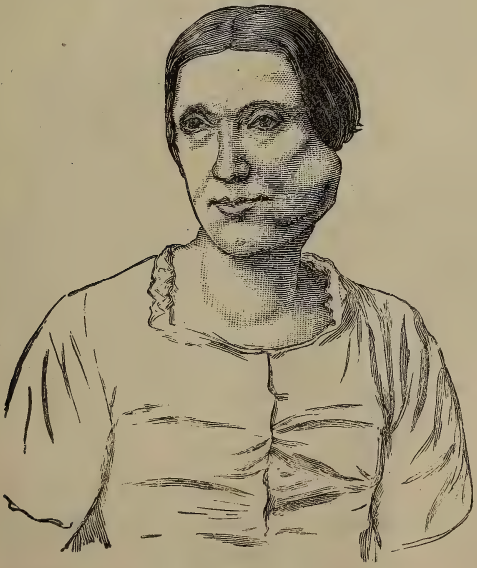
Fig, 19.

Chondro-sarcoma is characterised by rapidity of growth and by early recurrence after removal. The primary tumour is mainly enchondroma, but the recurrent growths are chiefly composed of small round-celled sarcoma, which tends to produce internal deposits through the vascular system.

The following good illustration of the disease occurred under my own care. A woman, aged 44, was admitted into University College Hospital on April 11th, 1877, with the following history :—She first noticed a swelling connected with the left side of the lower jaw nine months before. The swelling was painful, and accompanied by numbness over the chin. Twenty years before she had received a violent blow over the jaw, when attendant in a lunatic asylum. The family history threw no light on the case. The patient had always enjoyed good health.

On admission, there was a large tumour on the left side of the lower jaw, and firmly connected with the inner and outer surfaces of the bone, extending from an inch behind the symphysis to the angle. The growth generally was firm and elastic, though some parts were much softer than others. The border of the tumour was well defined, and the skin was freely moveable over it. A nodule, the size of a walnut, projected between the teeth into the cavity of the mouth. The patient complained of shooting pains in the tumour, which ran along the lower lip. There was no enlargment of lymphatic glands, and no other tumour. The general health was good. The patient's appearance is shown in Fig. 20.

Fig. 20.



On April 14th I removed the tumour with the bone involved, from the left of the symphysis to an inch above the angle, and the patient made a good recovery.

Eleven weeks after discharge she was re-admitted. The lower borders of the segments of the previously divided jaw had united by fibrous union, but a V-shaped notch existed at the upper border large enough to admit the tip of the finger. Recurrence of the growth had taken place in connection with both divisions of bone. There was a tumour as large as a hen's egg beneath the chin, but this could not be felt through the mouth, whilst a second and larger one caused bulging on the left cheek, and was mainly situated over the ramus of the jaw; it projected into the oral cavity and rendered articulation indistinct, although there was no difficulty in deglutition. The skin was freely moveable over both masses; there was merely a linear cicatrix at the line of the old incision. The lymphatic glands were not enlarged, and the general health was good.

A second operation was done on August 1st, 1877. It being found impossible to remove the tumour by the mouth, I made an incision along the lower border of the jaw, from two inches to the right of the symphysis for a distance of six inches. The lower lip was dissected from the bone and turned upwards, and the jaw sawn through at the symphysis, which allowed a piece on the left to be removed with the growth attached. It was found that the whole of the posterior mass could not be removed, as it extended deeply into the pterygoid region, so after enucleating as much as possible, the operation was not further proceeded with. The wound was syringed out with strong solution of chloride of zinc, and then plugged with lint.

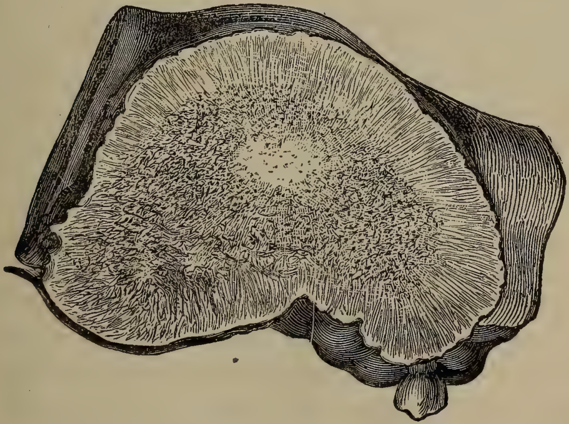
For the first fourteen days the wound continued to heal rapidly, but at this time it commenced to fungate, and on the twentieth day sharp bleeding ensued, which required the actual cautery to arrest it. Severe pain was more or less constant, and the discharge very fetid. On the 28th the fungating mass reached the clavicle, and completely hid the left side of the neck; hæmorrhage again occurred, and the cautery was employed.

In spite of a supporting plan of treatment the general health rapidly failed, the patient fell into a semi-comatose condition, got more and more asthenic and cachectic, and died on the forty-third day after the second operation.

Ossifying Sarcoma and Osteoid Chondro-sarcoma imply the occurrence of ossification in tumours containing sarcomatous elements, and include the cases hitherto described as "osteoid cancer." A good specimen of the kind is preserved in the Museum of the College of Surgeons (1712), of which the history with an accompanying drawing is recorded in Mr. Howship's *Surgical Observations.* The specimen has been macerated, and the part which remains consists of an oval mass of light cancellous bone about five inches in its chief diameter; and very slightly connected with the remaining bones of the face.

Ossifying sarcoma, in which ossification takes place extensively in a matrix of sarcomatous tissue, occurs in the lower jaw, and as in the following case, presents at first most of the characters of an ordinary osteoma. Fig 21 shows the portion of the lower jaw at first removed, with a section of the tumour (College of Surgeons' Museum. 2241 A), which is difficult to distinguish from ordinary bone, except by the striation seen best at its margins. The rapid

Fig. 21.



recurrence of the disease in a soft form showed the true nature of the case, and the patient died exhausted within a year of the first operation.

W. G., aged 50, was admitted into University College Hospital on May 9th, 1881. About five months previously he noticed a pricking pain about the left side of the lower jaw, and soon a lump appeared outside the bicuspid teeth ; it grew steadily but slowly, until one month before admission. At this time the patient had several teeth extracted, and the increase in the size of the growth became rapid after this interference ; there was constant gnawing pain. The patient believed exposure to the cold to have been the cause of the swelling. Both his parents died of "old age," and had no kind of tumour.

On admission, the lower part of the left cheek was bulged outwards considerably by a very hard round swelling, which covered the outer side of the left half of the lower jaw from a short distance in front of the angle almost to the left canine ; the lower edge of the bone was concealed by slight projection of the mass below it ; and on pressing upwards in the submaxillary region a considerable swelling could be felt on the inner side of the bone. Altogether the impression conveyed to the fingers was that the growth was central, and that the so-called expansion of bone had occurred over it. No teeth were present on the left side behind the canine, the alveolus was widened, and presented posteriorly, several low, rounded swellings, covered by mucous membrane, soft or even cystic ; whilst in front lay a large crater-like ulcer, at the bottom of which no bone was bare. The tongue and floor of the mouth were normal. A small, not tender, gland could be felt behind the angle of the jaw. There was moderate constant pain in the part, much increased by hanging the head down. As regards general health there was nothing to be desired.

On May 11th ether was given, and the growth removed by an incision from the left angle to the symphysis ; the jaw was sawn through to the left of the symphysis ; the soft parts stripped from the growth, and then the bone was divided near the angle. The wound was closed by wire sutures, and dressed with cotton wool.

The wound was all but healed on the eighth day, quite so on the twentieth, when the man left the hospital feeling quite well.

In three months, however, he was re-admitted, having had a distinct recurrence for six weeks, with much constant pain. His health was still very good.

On September 6th, 1881, the whole of this mass, together with the ramus, coronoid process, and condyle, of the jaw were removed by the ordinary incision for the removal of half the lower jaw.

The patient again recovered, without any bad symptoms. The hinder part of the wound gaped widely, but it was healing steadily, and there was no obvious recurrence on October 8th, when the patient left the hospital.

On January 30th, 1882, the patient was again admitted, having noticed a recurrence of the growth two months. The left cheek was now enormously swollen, and the angle of the mouth pushed forwards by a mass of new growth, fungating into the mouth along the line of the jaw, but elsewhere covered by mucous membrane. The old wound was healed, but an ulcer an inch and a-half by half an inch, round which there was a good deal of firm infiltration at its posterior end. The growth was firm and elastic at some points, bony at others, adherent to the symphysis, but not very firmly. The whole face was œdematous; the left temporal fossa rather full, and the seat of much pain. The man was still pretty strong.

On February 2nd the old incision was opened up, and the main part of the growth turned out; but, as it seemed to involve the tonsil and carotid vessels, and to spread into the temporal fossa, much had to be left.

Again the patient made a good recovery. The anterior part of the wound healed, but the posterior gaped widely, and he went out with a large hole here. Pain in the temporal region continued. He died at home on April 5th, having been able to walk up and down stairs to the last. The total duration of the disease would, therefore, seem to have been about seventeen months.

(*To be concluded*).

COCAINE AND ITS USE AS A LOCAL ANÆSTHETIC IN DENTAL SURGERY.

By WILLIAM HERN, M.R.C.S. & L.D.S. Eng.

Assistant Dental Surgeon to the Dental and Middlesex Hospitals.

(*Concluded from page* 772.)

MR. CUMMING* records a case of a patient, a lady æt. 25, for whom he injected 7 or 8 grains of cocaine in as many days for the extraction of roots, with fairly good results as to pain, and in whom no constitutional effects followed.

He also records his individual experience of 1 grain injected for extraction of upper central incisors. Immediately after injection the lips swelled up, and tongue had a sensation as if scalded. In two minutes teeth were extracted, each with considerable pain. It produced irregularity of the heart, tingling, and cold extremities, which lasted two hours. For two days the patient was almost prostrate, and without sleep.

Mr. J. M. Ackland has related to me a case of a female, æt. 50, for whom he injected 10 minims of 10 per cent. solution for the extraction of an upper wisdom tooth, and immediately afterwards, for experimental purposes, repeated the dose for the removal of an upper central incisor. Both operations were performed painlessly, but an attack of vomiting supervened, accompanied by some incoordination of movement. The symptoms passed off in a short time.

Mr. Chas. Tomes† reports his personal experience of 1 grain injected in neighbourhood of a painful tooth, which failed to abolish the sensibility, and shortly after injection unpleasant toxic symptoms supervened, among which were giddiness, nausea, slight unsteadiness of gait, cold and clammy hands. The sensations of nausea and feelings of discomfort persisted for two or three hours.

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* *B. D. A.*, February, 1887.

† "Trans. of Odonto. Soc.," 1886.

Mr. Balkwill,* of Plymouth, also relates his personal experience of $1\frac{1}{2}$ grains injected for removal of second lower right molar. Four minutes from first injection the tooth was extracted by himself at second attempt.

Results.—Anæsthesia was complete in the gum, but there followed in one minute peculiar sensations all over the body, not exactly of nausea or faintness, but more like that produced by exhaustion, cold, or want of food, also decided dimness of sight, and sense of depression at pit of stomach.

In two minutes there was free perspiration over the face without pallor, decided numbness of right cheek and lips beyond angle of mouth, and as high as the cheek-bone. Also inability to hold back the lips when extracting the tooth.

In ten minutes pulse became very slow and feeble, necessitating ʒj. of Sp. Ammon. Aromat.

In fifteen minutes noticeable diminution of numbness of cheek and lips.

In two hours numbness and general uneasy sensations nearly disappeared.

Mr. Tothill† records six cases of injection :—

In first case, a girl æt. 12, injection of 1 grain in warm water, and extraction, performed after six minutes, was followed by stupor and vomiting.

In second and third cases, robust young women, with the same dose and time. It was followed in each case by slight pain and stupor.

In the fourth case, an anæmic girl, with an injection of 1 grain, and the tooth extracted after ten minutes. The patient lost consciousness for two-and-a-half hours.

In the fifth case, an old man, with same dose, &c. No pain was felt, and no constitutional results.

In the last case, a gentleman, æt. 27, injection of $\frac{1}{2}$ grain. This was followed by violent struggling, dilated pupils, and vomiting.

Dr. Hepburn‡ finds that the use of 20 to 30 minims of of 4 per cent. solution ($1\frac{1}{6}$ grains) is often followed by constitutional effects, which, while not dangerous, are somewhat disagreeable to the patient. They are as follows:—Some general anæsthesia, staggering gait, double vision, dilated pupils, dizziness and nausea; which effects usually pass off in an hour or so.

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* *B. D. A.*, November, 1887.

† *B. D. A.*, April, 1887.

‡ *Ind. Pract.*, January, 1885.

Dr. Schilling reports in *Lancet*, January, 1886, *ex. Pharmaceutical Journal*, 6 minims of 20 per cent. solution, injected for extraction of upper molar, was followed by symptoms of which unconsciousness and rigid aspect of the face were the chief. Inhalation of three drops of amyl nitrite restored the patient to consciousness.

Dr. Elder, of Nottingham,* reports:—12 minims of 10 per cent. solution (freshly prepared), injected under skin for opening superficial abscess, followed in three to four minutes by syncope, twitching of face, falling of jaw, coldness of body, clammy perspiration, lividity of face, and, in fact, all the appearances of imminent death. The patient was several minutes recovering consciousness, and during the remainder of the day felt very prostrate.

Dr. Knapp† records headache, vertigo, nausea, tottering gait, pallor of skin, cold sweat, &c., as resulting from daily injection of 24 minims of the 4 per cent. solution of hydrochlorate.

The results of my own experience with cocaine for extractions, culled from trial of ninety cases for which I have used it during the past two months at the Middlesex Hospital and the Dental Hospital of London, in the carrying out of which I have great pleasure in acknowledging the valuable and intelligent assistance of Mr. Rouw, the House Surgeon, as well as the Assistant House Surgeons, are as follows (the hydrochlorate was used in fresh 10 per cent. solutions):—

Of the patients 58 were females, 32 males.

	Males.	Females.	Total.
Under 15 there were	10	9	19
Over 15 and under 20	8	20	28
Over 20 and under 30	6	18	24
Over 30 and under 50	8	11	19
	32	58	90

Average amount injected was 7 minims.

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* *Lancet*, November, 1886.

† *Lancet*, November, 1885.

Amount Injected.

In 2 cases 3 minims were injected.
" 9 " 4 " "
" 32 " 5 " "
" 30 " 6 " "
" 6 " 7 " "
" 3 " 8 " "
" 7 " 10 " "
" 1 " 12 " "

Results as to Pain.

	Males.	Females.	Total.
1st. Where markedly successful, no pain being complained of ...	15	28	43
2nd. Where pain was reduced but not entirely removed...	14	26	40
3rd. Considerable pain, not relieved at all...	3	4	7

The average time between injection and operation was 7 minutes (nearly).

In 1 case it was 3 minutes.
" 4 cases it was 4 "
" 15 " 5 "
" 17 " 6 "
" 27 " 7 "
" 15 " 8 "
" 6 " 9 "
" 4 " 10 "
" 1 " 11 "

The operations performed were as follows :—

Extractions.

Molars	56
Bicuspids	25
Canines and incisors	13

In six cases double extractions were performed, the teeth removed not being in proximity to each other. In these cocaine was injected for one tooth only, and in order to leave the patients free from prejudice and bias in their reports of subjective sensations, the tooth to be removed without cocaine was injected with water in two instances. Nearly all patients agreed in reporting more pain where cocaine was not used, and, I may add, their demonstrations coincided with their statements. In one case only the patient stated "there was not *much* difference."

Pulse.—It is difficult to estimate the effect on the pulse, especially in hospital patients, inasmuch as the results of mental excitement, due to the impending operation and the effects of the sights and sounds of the operating rooms, cannot be eliminated. The usual effect noticed was a considerable increase in the rate of the pulse. In twenty-five cases where the pulse was taken before injection, and again two to three minutes after, the average increase in the rate of the pulse was 15.

In twenty of these cases the pulse was taken again from ten to twenty minutes after the injection and operation. In fifteen of these the pulsations averaged 14 above the rate before injection ; in the remaining five the average pulsation was 6 below the rate before injection.

Constitutional Effects.—In three cases somewhat distressing toxic symptoms were produced, as headache, severe palpitation, syncope (not severe), nausea, precordial pain, tingling, unsteadiness of gait, vertigo, cold perspiration, and some prostration. These passed off in two cases, in one of which coffee was administered with good effect, in about half-an-hour; in the third case, a girl, æt. 18, who manifested a good deal of hysteria, only after an ice-bag had been applied to the head, and the patient had slept about an hour.

In one of these cases 10 minims of the 10 per cent. solution was given ; in another, 8 ; in the third, 6. The patient to whom 10 minims was given was injected on the following week with half the previous dose (viz., 5 minims), and with the exception of very slight palpitation, had no bad symptom.

In fifteen cases slight constitutional symptoms were observed, such as pallor, feeling of faintness, slight giddiness, hot or cold perspirations, all of which passed off in a few minutes. In some of these the symptoms were only objective —*e.g.*, pallor and slight perspiration over the face—in which the patients declared they *felt* nothing amiss.

I am unable to lay these symptoms wholly to the charge of the cocaine, inasmuch as the mental effect of apprehension, coupled with the slight physical pain of the syringe puncture, might have produced them ; we see such symptoms sometimes follow the operation of vaccination in adults.

For injection a *small* needle was used.

No. of Punctures.

In 4 cases 1 puncture was made.

, 51 ,, 2 punctures (1 outside, 1 inside alveolus).
,, 23 ,, 3 ,, (3 ,, 1 ,,).
,, 12 ,, 4 ,, (or 3 outside, 1 or 2 inside alveolus).

The three punctures seemed to give the best result—one on the lingual aspect of the tooth, and two on the labial; the latter being placed, one in front, and the other behind the prominent ridge on the buccal alveolus corresponding to the root of the tooth operated upon.

The pain due to the puncture for injection may be reduced considerably by using, first, small needles; secondly, by injecting one minim of cocaine immediately the point is introduced into the mucous membrane, after which the further intrusion of the needle is not felt by the patient.

Before proceeding to a conclusion I would like to point out that—

1st. We are dealing with a powerful alkaloid, as demonstrated by its physiological action.

2ndly. We are using it in a manner by which its full physiological effect on the system is very rapidly attained, and by which errata are easily and surreptitiously introduced.

Bearing these in mind three guiding principles can, I think, be formulated—

I. That the dose should be a very reduced one.
II. The instruments used should be scrupulously clean.
III. The solutions should be perfectly pure.

The necessity of the first may be gathered from the analogous therapeutical employment of other alkaloids.

The importance of the second is known to all, and the significance of the third is better appreciated from the fact that aqueous solutions of cocaine and its salts are found after the lapse of a few days to develop a fungus which usually produces a cloudiness of the solution. And many cases are reported in the medical journals of untoward results following the use of stale solutions of cocaine; fresh solutions should, therefore, only be used.

The foregoing cases, I think, show that—

I. Doses of 1 grain and upwards, hypodermically injected, are comparatively frequently followed by constitutional symptoms, which, if not actually grave, are nevertheless distressing and disagreeable.

II. That doses of which the maximum is half a grain, though not absolutely free from constitutional effects, are very much less frequently followed by such. The symptoms, if any, produced, being for the most part transcient and unimportant, the unpleasantness commonly passing off in a few minutes.

III. The anæsthetic results of half-grain doses for the extraction of teeth lead one to think that any further serious reduction in amount would be insufficient to relieve the pain of the operation.

In judging of the practicability of the employment of cocaine as an anæsthetic for extractions, one has to weigh the advantages and disadvantages of its employment, and compare it with those agents for the production of general anæsthesia now in use. After doing so, I am led to the following conclusion, viz., that as an agent for general use in extraction :—

I. The physical barrier to injection which the bony alveolus interposes.

II. The pain, however slight, due to the puncture of the syringe.

III. The mental suspense due to the necessity of waiting several minutes between the injection and operation.

IV. The full consciousness under which the operation is performed.

V. The varying idiosyncrasy of patients with reference to the drug.

VI. The inconstancy of production of complete anæsthesia.

VII. The necessity of limiting the dose, so that only one part of the mouth can be safely anæsthetised for the same patient at a given time, and that only such as to allow of one, or at most two teeth being removed.

These all combine to relegate the drug to a subordinate and secondary position, leaving nitrous oxide gas in the possession of the field, as the *facile princeps* for the vast majority of such operations. Other than for extraction there are various operations in which cocaine can be beneficially employed as an obtunding agent, as a submucous injection in dental practice, such as for wedges, clamps, separators, as recommended by Mr. Smale, the excision of gum tissue, removal of small growths, opening of deep-seated abscesses, reduction of pain in manipulation of fractured maxilla for models or splints, operations on teeth affected with acute periostitis, &c., and in doses not exceeding ½ grain of the hydrochlorate may be performed in a painless manner, and without serious risk of toxic symptoms.

In judging of the results of all local anæsthetics, the effect of imagination on the mind of the patient has to be eliminated. With due regard to this, I believe that cocaine, although not all that could be wished, is yet one of the most powerful local anæsthetics which has been introduced to the profession of late years, and is on the whole a valuable and material addition to the Dental Pharmacopœia.

CLEFT PALATE AND ITS TREATMENT.*

By J. Harry Badcock., L.D.S.

Cleft Palate is a term applied to any abnormal communication between the oral and nasal cavities whatsoever be its cause or extent. It is a deformity by no means confined to man, examples of it are found in horses, calves, dogs and other animals, and cases are recorded of birds whose upper mandibles have presented median clefts.

This condition may be congenital or it may be acquired after birth owing to disease or accident, and thus, setting aside for the moment accidental cases, we are furnished with a useful classification, sharply defining the former as the result of a morphological defect, and the latter as the outcome of a pathological process.

The etiology of congenital cleft palate is at present extremely obscure. Heredity seems to have little or no influence in producing the deformity, for in the generality of cases the child so afflicted comes of comparatively healthy stock, and the other members of the family are unaffected ; hence, the ultimate causes would seem to depend on conditions affecting the health of the mother during the early part of gestation, *i.e.*, before the 10th week, but these conditions are, at present merely matters of speculation and therefore quite beyond the reach of prophylactic measures. It is noticeable that this affection, although not absolutely confined to any particular class, is chiefly found among individuals low down in the social scale, the victims of imperfect hygiene and insufficient food.

The proximate causes, however, are well known, but in order to trace them intelligibly. a short sketch of the development of the jaws is necessary.

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* Prize Essay, 1887.

In the human fœtus, the first indication of the masticatory apparatus makes its appearance about the 20th day by the budding out of five little tubercles from the first visceral arch. The middle one, the fronto-nasal process, consists of three parts, a mid-frontal which forms the septum of the nose and intermaxillary bones and two lateral plates separated from the median plate on each side by a slight furrow which forms the upper part of the nasal passage. These grow downwards and forwards in the same direction as the median plate and parallel to it but do not proceed so far. They form the ethmoid and turbinated bones.

On either side and separated from each other by a wide interval are two tubercles for the upper jaw, and below them, and divided from them by a small fissure are two more which afterwards grow inwards and coalesce in the middle line to form the lower jaw. Those for the upper jaw having descended a certain distance incline inwards to meet and unite with the lateral plates of the fronto-nasal process, and continuing their course forwards and inwards below them, they form the lower part of the outer wall of the nasal cavities and reach the mid-frontal process soon becoming united with the fore-part of this latter through the medium of the mass in which the intermaxillary bones are developed. In many animals the intermaxillary bones remain separate throughout life, and in the human subject, indications of the sutures discovered by Goethe, in 1786, by which they join the superior maxillaries persist on the palatal surface of the jaw, running from the anterior palatine foramen to the interval between the lateral and canine teeth.

During the development of the superior maxillary tubercles a process grows out horizontally from each which meets its fellow in the middle line and these uniting with each other about the end of the 10th week, and with the fronto-nasal process form the palate, while the vomer descends to meet them. Now, if the development of one or of both the palate processes is arrested cleft palate results, and if at the same time there is non-union of the superior-maxillary and fronto-nasal processes, it is accompanied with single or double hare-lip as the case may be. In some rare cases the fronto-nasal process is arrested in its development and a wide gap results.

It used to be held that non-union of this suture was the invariable cause of hare-lip, but in 1879, Paul Albrecht published a series of investigations, proving very conclusively that this is not the case; for he found not only in human subjects but also in horses and calves, clefts extending through the alveolus co-existing with, and internal to this same suture; and partly from these premises he argued that there were two intermaxillary bones on each side instead of one, as originally supposed. His statements were confirmed by several scientists abroad and also in a very able paper read by Prof. Turner, in 1885, giving the results of the examination of fifteen cases of cleft, either single and double. In only three out of these fifteen cases was the cleft situated next to the canine without a tooth intervening, and in one instance, where two laterals were present on each side of the mouth, the cleft was between the two laterals. Now, if it is granted that the canine tooth is the first behind the maxillo-intermaxillary suture, it is perfectly evident that if the fissure is situated internal to a tooth in front of the canine, it must necessarily be in the substance of the intermaxillary bone. Humphry, in his work on the skeleton says that the position of the "cleft is on one side of the middle line between the maxillary and intermaxillary bones, *i.e.*, in the line of union of the middle and lateral frontal processes," and this suggests the possibility that the lateral plates of the frontal process may really come as low as the central one, though this is the opposite of what is stated by Humphry and also by Callender, in a paper published in the Philosophical Transactions for 1869. It is interesting to note that in the specimens of double cleft figured by Humphry, to illustrate his statement, a pre-canine tooth exists on both sides, though on one side I believe it is a temporary canine. Out of sixty-four cases collected by Kolliker there are only thirteen where the fissure is situated directly adjacent to the canine, and in these thirteen there is no reason to doubt that it followed the maxillo-intermaxillary suture.

Following close upon Prof. Turner's paper was another by Mr. Oakley Coles, giving similar evidence. These observers also confirmed a statement of Albrecht, that indications of another suture are often found to exist starting from near the beginning of Goethe's suture and going forward to the interval between the central incisors and lateral. Kolliker disputes this fact, saying that the appearance described is caused by vascular furrows for branches of the anterior palatine artery. He urges moreover that at an early period of development the teeth and jaws are quite independent of each other, and hence the position of the cleft with regard to the teeth is no evidence of the relation the cleft bears to the bones of the jaw. This argument would seem to be tenable, although it is very difficult to lay aside the presumptive evidence afforded by the very similar disposition of parts in so large a number of cases. The question must, however, remain undecided, until more developmental evidence is forthcoming.

This discovery, if discovery it is, has a very important bearing on the homologies of the teeth, a subject however beyond the scope of the present paper.

In the commonest cases of cleft the uvula and soft palate, or part of it, or the uvula only is fissured, but if the arrest of development takes place at an earlier age, the hard palate also suffers, for the process, of union proceeds from before backwards, and, as one would expect, taking into consideration the fact that the palate consists of three pairs of symmetrical bones, viz.: the intermaxillary, maxillary, and palate bones, it usually presents one of these degrees of non-union, according as the arrest takes place before the completion of either of these sutures.

Congenital cleft of the hard palate without involving the soft, is a very rare occurrence, as is also the condition sometimes seen of holes in the middle line, though they are common enough as the result of disease.

Where the fissure extends to the lip it is very noteworthy that it invariably leaves the middle line at the point of union of the maxillo-intermaxillary sutures and following either the suture of Goethe or Albrecht, pursues its course on one or both sides of the mouth, inthe latter case leaving the intermaxillary bones supported only by the anterior part of the septum nasi, usually projecting forward and covered by the central part of the upper lip, if this is not entirely wanting. Neither is the cleft always symmetrical as far as the intermaxillary bones though this is sometimes the case, for as it is due not merely to non-union, but also to arrested development, it is evident that the two sides may be affected in unequal degrees or what usually obtains there may be a deficiency of one side only, and the cleft be wholly lateral. In the worst cases the vomer may be left hanging free in the common naso-oral cavity, but more generally it is attached to the palate on one side, usually the right, for curiously enough, when the fissure is unilateral and the hare-lip, if there be any, single, the left side is in the great majority of cases affected. Kolliker found this to be true of one hundred and thirteen out of one hundred and sixty five recorded cases of unilateral cleft.

Accompanying fissure of the hard palate there is usually some deformity of the dental arch and consequent irregularity of the teeth. Most commonly the arch is contracted as if the sides had been pinched together, owing probably to the pressure of the surrounding soft parts (though the opposite may be the case.) Frequently when there is non-union of the maxilla and intermaxillary bone an adjacent tooth lateral or canine is missing; while in cases of double fissure the intermediate incisors an invariably faulty both in development and position.

The symptoms of congenital cleft palate in an infant, unless accompanied with hare-lip are often far from being as obvious as one would expect, considering the serious nature of the malformation. There is frequently no interference with sucking and deglutition to arrest attention unless it be an occasional escape of milk from the nostrils. The child learns very early to use its tongue as an obturator, and having never known the use of a palate, contrives to manage very well without it. From the first it grasps the nipple between the tongue and lower gum and lip and while the dorsum of the tongue closes the palate it abstracts the milk by depressing the tip and contracting the lips. As the child gets older, it manages mastication in much the same way, under the tongue; and deglutition suffers little, if at all. Not so articulation, From the firstitisim perfect in the extreme,highly disagreeable and with difficulty intelligible to a stranger. The mouth and nose are rendered almost useless, as resonators, owing to their altered shape and abnormal intercommuication with each other. The pronunciation of gutturals is impossible, except in rare cases, while dentals and labials approximate to nasals and sibilants are difficult if not lost entirely. These defects are exaggerated tenfold when the lesion has been acquired, and deglutition is almost an impossibility for no muscles have been trained to a correlated action that can assist the process, while those sets which have been accustomed to act in normal deglutition still respond to every stimulus and thus makes matters worse. The expression of the face is frequently altered, for though there may be no hare-lip the premaxilla is often small and flattened, while the vicarious action of certain facial muscles adds to the unpleasant effect.

The treatment in early infancy need only be directed towards enabling the function of sucking and swallowing to be properly performed, in order that the child may not suffer from an insufficient supply of nourishment. As has been stated above, unless the fissure be very large, little or no inconvenience may be experienced, but if this should be the case, the remedy is both simple and easy. The child may be fed slowly, with a small spoon or a teat, placed far back in the mouth, so that the milk, preferably the mother's, may flow gently without the necessity of sucking; or a teat may be used with a thin flexible indiarubber velum attached as advocated by Oakley Coles. In many cases the teat alone is sufficient if it be a large one and the orifice be made on the lower side.

But as age advances and a purely liquid diet is abandoned, other treatment must be devised and this may be surgical or mechanical and should be varied to suit the exigencies of the case. At this point it will be well perhaps to mention briefly the various methods of treatment their application and respective merits.

It has been proposed to close the cleft by means of pressure on the yielding bones in early infancy, a method first adopted by Velpeau, but although great success has been claimed for it, grave objections can be urged against it, objections more apparent, perhaps, to the dentist than the general surgeon. It must obviously cause great lateral contraction of the upper jaw and alveolar arch, a serious deformity in itself and one involving inevitable crowding and consequent injury of the teeth, even if their development does not suffer, to say nothing of the possibility of its giving rise to inflammation of the parts by over pressure. Altogether the method is severe and its advantages more than questionable. It has of late years been superseeded by staphylorophy, generally said to have been originated by Roux, about 1825, but this is hardly true, for an operation of the kind was performed as early as 1764, by a dentist of the name of Le Monnier. According to M. Trèlat, Roux did not attempt this treatment before the age of sixteen, as until introduced by Thomas Smith, in 1869, anæsthetics were never administered for fear suffocation might be caused by the blood from the operation, which is always abundant, entering the air passages, and as perfect stillness is essential it was an ordeal requiring the greatest courage and self-control on the part of the patient. A few years later Sèdillot performed staphyloraphy for a girl, aged 10. Weber did it at a few months old, while Simon, of Rostock operated on an infant of fifteen days, and Roye, of Lausanne at the tender age of a week. Practised so early, it was however, almost uniformly unsuccessful. It should, if possible, be undertaken before the child learns to speak, as the after results in this direction will then be far better, at the same time it must be borne in mind, if operation is decided on, that it is unwise that it should take place too early as there is great tendency in clefts of the hard palate to loosen in width as the child grows older, especially in front, where fissure of the alveolar arch may close spontaneously. It is now generally admitted that the operation is best performed about the ninth year, if the soft palate only is fissured, or if the bones are also implicated about the fifth or sixth and this gives ample time for as much spontaneous closure as will take place while it is sufficiently early to allow of after-growth and good articulation.

(*To be continued.*)

Monument Erected to the Memory of Dr. John Stewart, of Dundee.—A very fine specimen of monumental granite, richly decorated, has been erected at the family burying-place of Dr. John Stewart, the well-known dentist of Dundee. The ground is situated on the North side of the first intersecting path of the Western Cemetery, and near the Eastern boundary wall. The monument consists of an inscribed Celtic cross enriched with entwined ornament, strictly following the forms usually found in the monuments of an early period at Iona. The raised surface is polished, and the design is relieved by pounced work. The cross and the interlacing triangles, which form the accepted symbols of the Trinity, are repeated in several portions of the structure, but are strictly in keeping with the whole style. The base on which the cross is erected is formed of a sloping plinth, set upon a square sub-base. Each of the four faces of the base is polished, so as to show to advantage the lettering of the inscription, which is of gold. The ground, which is beautifully laid out with a bedding of Alpine plants, is enclosed by a finely polished border of Corennie granite. The sub-base measures 4 ft. 2 in. by 3 ft. 4 in., and from the ground to the top of the cross the height is 12 ft. 10 in

British Journal of Dental Science.

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DENTAL THERAPEUTICS.

OUR students have doubtless, in their own estimation, a heavy burden already thrust upon them in their examinational requirements. Whether this be so or not, we will not at present enquire; we are concerned rather with the ignorance they display upon questions of Therapeutics, when other than surgical interference is indicated. The full Dental Curriculum no doubt includes formal lectures upon Dental Materia-medica, in which are included practical "tips" on Therapeutics. To the thoughtful man such a state of affairs is manifestly unsatisfactory. He recognises that the only reasonable knowledge of Dental Therapeutics must be derived from close study, and habits of practical observations made upon patients; and that both the study and the observations must be grounded upon a Pharmacological basis. It is very well to repeat the much-worn excuse that "our students" have as much to do as their minds are capable of retaining. The answer readily occurs: As the child is father to the man, so the student is parent to the practitioner; if the student finds no time for Dental Therapeutics, properly so called, neither will the full-fledged Dentist, and perchance he may even not find time to be a successful man. Our contention is, in the present article, that the successful Dental Therapeutist will have an immense advantage over his less cultured fellow-practitioners, and whom he will in the long run beat, and so gain the confidence of his patients more effectually and more deservingly. What, then, are Dental Therapeutics, and how can such a subject be acquired? We all know that the Pathological conditions of the mouth which are brought to us for treatment may be attacked from a surgical side, or may be dealt with by the aid of local and constitutional medicament; we also know that it is the custom among Dentists—and we deem the usage a right and just one—to refer all patients to their Physician for constitutional treatment, reserving to ourselves the application of local remedies. Now the reasonable knowledge concerning these local remedies cannot be attained in a perfunctory attendance upon Materia-medica lectures. The revival which has taken place in general Therapeutics within the last decade or so, has advanced our knowledge of that science from mere empiricism to a region of precise thought, induction, and deduction.

The Therapeutist of to-day is not the man who has, by dint of hard reading, accumulated facts concerning this, that, or the other drug; but it is he who, with a precise knowledge of the general line of action of a family of plants, or it may be mineral bodies, deduces from these facts a new and valuable mode of treatment by kindred bodies. Nor are the fields of Therapeutics so narrow that they offer no incitements for Dentists to prosecute research amidst their, as yet, many undiscovered treasures.

One example may be cited as showing through what wide regions Therapeutics extends its conquests in even short periods of time. Bacteriology, a science only christened yester day, to which Pasteur, Koch, Banmgarten, Davaine, Burdon-Sanderson, and a host of other men, stood sponsors, had scarcely seen the light ere Therapeutics pushed its enquiries into the fresh fields thus opened. Germicides, disinfectants, antiseptics, parasiticide, became closely studied, their powers duly investigated, and their true merits put upon trial. One of the earliest and one of the most scientific researches of this nature emanated from the skilled pen of that learned physician, the late Dr. Buchanan Baxter. Since then hosts of experimental enquiries have been begun, continued, and ended, with results fecund in benefits to germ-afflicted humanity. It must be admitted that Dentistry has profited in no small measure from such researches and such conclusions. Bacteriology, thanks to the able researches of Miller, of Berlin, and others, our countrymen, has taught us how widely distributed are germs throughout the buccal cavity, and it has been the work of Dental Therapeutists to apply their previous knowledge of drugs in the direction of discoveries how best to cope with and destroy oral paracites.

These Therapeutic labours have, as is well known, been rewarded by a large measure of success. Even admitting, however, the truth of all that has gone before, we are bound to confess that but little formal research work, or papers dealing with Therapeutic research, have emanated from the Dentists of the United Kingdom. Much has been taken from the writings of surgical and medical Therapeutists, and, with some bright exceptions, our brethren have contented themselve with adopting and adapting the views of experimenters outside the dental pale. Under the present régime such a condition of things is in no way surprising. Very few of us as students ever learned what Therapeutics meant, and certainly were never indoctrinated with enthusiasm for Therapeutic research. We were contented to be told that fire burnt, and felt no feverish desire to test the matter for ourselves ; in the same way, our teachers informed us that carbolic acid stays putrefaction, that aconite deadens pain and allays inflammation. These things also we accepted, never asking a wherefore, or attempting to reason from them to new facts or fresh investigations. But we have said enough for the present, and may hope hereafter to return to the matter.

The Age of Reason.—How refreshing is the contemplation of the bombastic inflation indulged in by the truly ignorant professional man attempting by high falutin to throw dust in the eyes of non-professional minds. A very typical example of this is afforded by a witness examined before the Lords' Committee on "Rabies," who, having expressed an opinion that rabies was caused by a "germ," was immediately asked what he meant by that term, to which he seems to have replied that : "A germ is a kind of plasma or fibrin, it is exactly like the anemone sea-fish, it is something, and it is nothing; you can't define it." This highly cultured and erudite witness appeared in order to strengthen the cause of the Antivivisectionists, but we opine that in this instance "a success" was not scored! It is a sad reflection that the witness in question is a duly qualified medical man, who is, therefore " licensed to kill" " The anemone sea fish " ! !

ANTAGONISM BETWEEN MICROBES.—Speaking of micro-organisms, much attention has been paid to the question whether it is not possible to cure diseases owing their origin to bacteria, by introducing into the system other innocuous bacteria which contend against and destroy the pathogenic organisms. Dr. Garré, of Basle, who is a leading bacteriologist, has been investigating this matter with the following hopeful result. Dr. Garré chiefly studied the relations existing between Fluegge's *bacillus fluorescens putidus* (a non-pathogenic bacterium growing in putrescent fluids, in the water of wells and aqueducts, etc.) on the one hand, and a number of pathogenic and non-pathogenic microbes on the other. Experimenting in the manner mentioned above, he found that there was a most marked antagonism between Fluegge's microbe and the *staphylococcus pyogenes aureus*, as well as the *bacillus typhosus* and Friedländer's *bacillus pneumoniæ*. The three pathogenic micro-organisms did not grow at all when sown in a jelly which had served for three or four days as a nutrient medium for the fluorescent bacillus. The cholera bacillus and the *bacillus mycoides* continued to grow, though far more slowly than in an ordinary medium, while the *bacillus anthracis* and Finkler-Prior's rod increased and multiplied as luxuriantly as on a control-plate. This antagonism is explained as being due to the fact that each species of bacterium secretes a material which is highly poisonous to other micro-organisms.

ANTIFEBRIN IN THE TREATMENT OF NEURALGIA.—Antifebrin has been extensively employed for some while in the treatment of fever, it has recently had its field of usefulness extended by its adoption by Dr. Demiéville, of

Lausanne, as an anodyne. In the treatment of neuralgia, and especially that affecting the trigeminal nerve, antifebrin has been proved most efficacious. It should be given in seven grain doses once, twice, or even four times in the day. This quantity usually removes the pain in about one quarter of an hour after the first dose, producing a feeling of pleasant drowsiness, and usually ensuring a refreshing sleep. If seven grains fail, the dose may be increased until as much as fifteen grains may be taken at once. Antifebrin is said also to relieve the agonising pain of cancer, and so may be used with advantage as an anodyne for epithelioma affecting the tongue, jaws, gums, etc.

OFFICE-HOLDERS AT THE INTERNATIONAL MEDICAL CONGRESS.—It is stated that the following gentlemen have been appointed officers in the section of Dental and Oral Surgery of the International Medical Congress for the United Kingdom:—J. Smith Turner, Secretary; T. H. Harding, C. Spence Bate, F.R.S. (England), William B. Macleod (Scotland), R. T. Stack (Ireland), Vice-Presidents.

DR. BOGNE'S RETIREMENT FROM THE SECRETARYSHIP OF THE DENTAL AND ORAL SECTION OF INTERNATIONAL MEDICAL CONGRESS.—Dr. Bogne's position has been taken by Dr. A. M. Dudley, of Salem, Mass. All letters and communications should be sent to him.

DEATH OF ONE OF M. PASTEUR'S PATIENTS.—An inquest was held at St. George's Hospital on August 10th on the body of Martin Cahill, aged 29, who was severely bitten on the left wrist at Templemore, on June 14th, by a mad dog. It was stated by Lieutenant Walter Rushmarsh, in whose employment the deceased was, that the dog having escaped he followed it, and on returning with the dog was himself bitten by it on the right hand, and it subsequently came to his knowledge that the same dog had bitten two of the hounds in a pack belonging to the 18th Hussars, stationed in Cork. Both the dogs died mad. On Saturday, June 25th, the witness, who had previously had his wounds cauterised, started for Paris to undergo treatment at the hands of M. Pasteur. The witness was treated for ten days, at the end of which time he was pronounced cured. The deceased, whose wounds were much worse, was treated for seven days longer, and was told when discharged that his case was still dangerous. Some days after, it was found that he was still suffering from the effects of the bite, and was sent to the hospital, where he died on August 7th. Mr. Russell Coombe, House Surgeon at the hospital, said he treated deceased as an out-patient for five days, at the end of which time he brought a note from his mistress, stating that he could not sleep. At that time the deceased was impressed with the idea that he was going, and could not swallow any food. On 6th he became extremely violent, and died at 10 o'clock the next day. The verdict arrived at was, Death through being bitten accidentally by a dog.

Abstracts of British & Foreign Journals.

OHIO STATE JOURNAL.

METHODS AND MEANS.

By C. EDMUND KELLS, Jr., D.D.S., New Orleans, La.

SYSTEM IN METHOD.—All operations upon the natural teeth may be divided into classes, and every operation of each class is performed exactly alike. One filling may require a little more or a little less of the material used, as the cavities vary in size and shape, but every detail is the same and the same group of instruments is needed for each. Fortunately is this so, as thus fewer instruments are required, and that is an essential point to rapid work.

APPLIANCES.—It is to the appliances of a comparatively recent date and a system in their use, that the operator must mainly rely upon to increase his capacity for work.

Of first importance are excavators; with one dozen each hatchets and hoes, any cavity can be prepared. This limted number are separately grouped in their respective classes, always in their places when not in actual use and when broken are replaced at once. By certain known cone-socket handles are these two sets of instruments distinguished.

Engine burs, by this systematic method, are needed in a few stated shapes and sizes. Six each, of round, invertod cone and wheel, three finishing burs and four spear drills constitute a complete set of cutting instruments, and any one of these may be selected in the dark. Burnishers, polishing points and disks of various sizes, are of standard variety and sizes in their places and in good order. The right-angle hand-piece attachment and its necessary points are indispensable to rapid work and always in a good condition. The cable—if a White engine is used—being liable to break, it is best to keep a complete duplicate arm, including hand-piece, cable, sheath and pulley head.

The depressed dam is vastly superior to the plain in many cases, for not only is it more readily applied to the posterior teeth when its method of use is understood, but it is more agreeable to the patient and exposes the teeth to greater advantage. There is seldom need of putting the dam on more than three teeth at one time. Once applied, patients prefer it to the napkin or paper. Waxed silk floss passed completely around each tooth will remain without tying. Clamps are but very seldom called for and should never be used unless absolutely necessary. When the dam is to be used it should be put on at once, for thus is the patient placed more completely at our command.

Of gold pluggers the fewer possible the better. Where hand-pressure alone is indicated, the mallet system will cause much unjustifiable waste of good dental tissue. The hand mallet has its sphere in which none other can come up to its level, but in other instances the power mallet—electric or mechanical—cannot be approached for speed, ease to operator and patient, and result obtained. In the Herbst method can be found much good, if judiciously used, but it will always be merely *one* of the methods and not *the* method of packing gold.

Non-cohesive or soft foil should be prepared before the arrival of the patient. Cohesive gold, should be cut and annealed as used, but fortunately that may be quickly done. Burnishers, trimmers, chisels and all other instruments needed are classified by their handles, and each individual one or set has its place and occupies it when not in use.

The pedal-lever chair saves much time, its positions are easily changed, no inducement is offered the operator to retain the patient in the least bit uncomfortable position.

The screw-separator has become a necessity to the practical man.

A free use of the left hand is to be greatly desired, and should be cultivated by all who wish to become rapid operators.

All materials such as gold, amalgam, cements, dam, polishing tapes and powders, etc., etc., should be kept in quantities ready at hand.

Remedies, plainly labelled, should always occupy each its own place upon its shelf.

Electricity should play an important part in our operating rooms. Electric bells are of great value. The electric mouth lamp will discover hidden cavities or detect without fail the death of a pulp. In cohesive foil operations the electro-magnetic mallet is a most delicate and rapid assistant.

Electric molars are advocated.

A lady assistant, the writer considers of the greatest advantage to the busy practitioner. The hundred and one little items of expenditure of time she will save in the course of a day need but to be seen to be appreciated. Half a dozen or more needless interruptions from work at the chair, in the course of the morning, will waste perhaps a half hour. This is saved while dismissing patient at the door, chair is made ready and bracket cleared of instruments. The next patient may at once be seated, and instruments previously used put in order during progress of operation. Amalgam is prepared, cement made ready, instruments placed at hand or removed, and in fact she is almost constantly busy in some time-saving service.

The writer describes what this system will do. At the appointed hour the patient takes the chair. At once the hot-air syringe and creosote are placed on the bracket, the dam punch and silk are at hand. A large and deep cavity in a molar needs our attention, upon which the dam is placed, forty-five seconds being ample for that. With the engine, the proper burs follow each other in rapid succession. Cavity being deep and sensitive, lining it is decided upon, and the materials asked for, and as we carefully trim and smooth the margins with fine cut burs, they are placed at hand. Dropping the hand-piece the cavity is washed with warm water there waiting, bathed in creosote, dried first by spunk and then by warm air. Quick setting cement, glass and spatula being all ready, but a few moments elapse before the lining is complete while this is setting. All instruments not needed are removed by the assistant, and gold of shapes, sizes etc., as asked for, are placed in position. Pluggers are selected without any delay in looking for them and the operations of packing six grains of soft foil occupies but ten minutes. While polishing the filling, instruments and foil are removed, dam is removed and about ten seconds allowed the patient for a long breath, for two upper third molars are still to be treated. Napkins are adjusted so as to nicely expose one of them, and a small cavity is prepared on grinding surface. Foil is asked for, and while cavity undergoes its cleansing treatment, is made ready. Packing the soft gold herein is quickly done and the polishing, as no delays are encountered, requires not much more time. Patient is given another breathing spell, when napkins are placed around the tooth still remaining to be filled. But a few moments are spent upon this one before deciding to fill with amalgam and the same ordered prepared. By the time cavity is prepared, washed, creosoted and dried by hot air, amalgam is ready and the packing is proceeded with. As patient descends from chair we find we have used up the sixty minutes allotted her, and we are just in time to greet the one for the coming hour. And this accomplished without any haste or by the neglecting any of the time consuming details, such as the smoothing of the cavities with fine cut burs, applying creosote, using hot air, washing the amalgam.

THERAPEUTISCHE MONATSHEFTE.

TEETH PRESERVATION.

By Professor Miller.

According to the author caries of the teeth is due to the formation in the mouth of free acids from carbohydrates, under the influence of ptyalin, invertin and bacilli. Lactic acid is formed most plentifully, acetic acid and butyric acid are only bye-products of the lactic acid fermentation. Professor Miller states that he has succeeded in obtaining pure cultures of fifty different species of bacteria taken from the mouth, among them *Leptothrix buccalis*, *Vibrio buccalis*, *Spirochaete* *dentium*, *Streptococcus magnus*, *S. medius* and *Staphylococcus pyogenes aureus*. Fermentation does not go on in the main cavity of the mouth, but in the depressions, fissures, interstices and cavities of the teeth, in which through imperfect cleansing portions of food are left ; the action of the acid is much more energetic during the night than in the day, when it is removed by food and drink and the salivary secretions. Such places are named by Professor Miller "caries centres," and to render them innocuous must be the object of any rational system of teeth preservation.

To achieve this, a suitable tooth brush must be employed. The author thinks little benefit come from the use of tooth powders, because although these may make the front teeth white, they rather stop up than purify the caries centres. He recommends "tooth soaps," because the fatty constituents cleanse without attacking the teeth, whilst they to some extent facilitate the penetration of the brush into the caries centres. They should, however, be prepared from neutral soap, and be themselves neutral, or only faintly alkaline in reaction. The following formulæ are given of preparations that have been tested :—

Magnes. carbon.,	
Rhiz. irid. flor.,	
Talci,	
Sapon. medicati . .	aa ʒjgs.
Ol. menth. pip. . .	gtt. x.
Mucil. acac. . . .	q.s. ut fiat massa.
Calc. carbon. præc. . .	100
Rhiz. irid. flor. . .	5
Oss. sepiæ pulv., . .	4
Sacchar. alb. . . .	2
Myrrh. pulv. . . .	2

Mell. et glycerin. q.s. ut fiat pasta.

In respect to a mouth water intended as a preservative of the teeth, the author stipulates that it should not simply prevent the development of the fungoid vegetation, but that it should kill it within one minute. The requirement is not met, for instance, by peroxide of hydrogen, since a 5 per cent. solution failed to kill the fungoid growth in fifteen minutes. The following formulæ are given for suitable preparations :—

Thymol. . . .	3.5 grains.
Acid. benzoic . .	31 gr.

Tinct. eucalypti . .	31 v.
Alcohol. absolut. . .	℥ iii.
Ol. gaultheriæ . .	gtt. xxv.
or Ol. menth. pip. . .	gtt. xx.

S. One teaspoonful to be added to a glass of water.

Thymol. . . .	7. 5. grns.
Sp. cochlear., . .	
Sp. meliss. comp. .	R ℥ j. p.
Tinct. ratanh. . .	3 ii.
Ol. menth. pip. . .	m v.
Ol. caryophyll. . .	m xv.

S. Ten drops to be added to half a glass of water.

DENTAL ADVERTISER.

EXTRACT FROM A MONOGRAPH ON LOCAL ANÆSTHESIA IN DENTISTRY AND MINOR SURGERY, BY PROF. GEORGE. VIAU,

TRANSLATED BY L. TURNBULL, M.D. PHILADELPHIA.

Dr. Aubeau employs a solution of cocaine, 5 per cent., an insufficient quantity where the roots are firmly set.

M. Telschow injects a grain and a half of cocaine, too powerful a dose.

Prof. Viau combines crystallised Phenic acid with three quarters of a grain of cocaine which assists the cocaine without affecting the general health.

M. Telschow weakens his solution of cocaine with the phenic acid to neutralize it. The author now describes his two modes of administering anæsthetics :

1. Anæsthesia by the aid of sub-mucous injections with a mixture of cocaine and phenic acid.
2. Anæsthesia by the aid of sub-mucous injections with a solution simply of phenic acid.

Local anæsthesia obtained by the aid of cocaine and phenic acid mixed.

In mixing one part of the phenic acid and two parts of cocaine, heating it very slightly, a product of a syrupy quality is obtained, which retains the rosy color of the pure phenic acid, and the odor is weakened. The taste on the contrary is decidedly modified. The phenic acid has lost its causticity. In using the product upon the gums or tongue a sensation of warmth is perceived with the taste of the weakened phenic acid, allowing the bitterness of the cocaine to penetrate. At the end of several seconds the taste and the odor of the phenic acid disappear completely, at the same time that the sensation of heat is perceived at the moment of contact, the taste of the cocaine alone remains, with complete insensibility to pain.

Mode of Procedure.

1. The filtered solution :

Crystallised phenic acid, - - -	2 gr.
Distilled water, - - - -	100 gr.

2. Package of hydrochlorate of cocaine. A Pravaz syringe which contains a c.c. of water, in which is made a slight modification by adding to the opposite side of the canula a shoulder piece, which enables one to hold it with greater ease and strength, with the index and middle finger, whilst the stem of the piston is pressed with the thumb. Different lengths of needles are necessary, in difficult cases of contraction of the jaws, to reach the wisdom teeth. He dissolves (1 grain) of cocaine in (10 drops) of phenic solution and injects slowly half of the mixture into the "labial face," half into the lingual or palatine—at a point situated between the neck of the tooth and the presumed place of the extremity of the root, to a short distance from that extremity. The finger is pressed upon the puncture, to prevent the liquid from flowing backwards. The patient must then wash out the mouth with fresh water. At the end of three minutes the soft parts are completely insensible. A very deep puncture is no longer felt. Between the fifth and sixth minute the operation may be commenced. Sex and age appear to have no influence on the anæsthetic results. Some patient have undergone, with several hours' interval, two or three operations, always with success. In submitting thus to the operation, it is evident that this facilitates many anæsthetic injections—a work requiring great precision. Observations show that the half of the ordinary dose of anæsthetic—has sufficed to produce anæsthesia.

Dr. Turnbull then adds the following remarks.

In a recent lecture, on anæsthetics he recommended cocaine but cautioned against the use of stronger solution in the eye than 1 per cent.,and for the extraction of teeth, 4 or 5 per cent., but in the ear and throat, a much stronger solution may be needed. Notwithstanding all precaution being taken, unsatisfactory cases will arise; patients of nervous or hysterical natures are subject to nausea and trembling, followed by depression, with loss of muscular power; and even comatose cases requiring powerful restoratives, while some state that no pain whatever is felt.

One sad death from cocaine has occured in connection with cocaine. An extract from the *Lancet* (London) gives some particulars of the fatal accident which led to the suicide of Professor Kolommine the operator. The Professor had decided to perform an operation for the removal of a portion of the rectum of a female patient, and inquired of his colleague, M. Louschinsky, what dose of cocaine he might administer. The answer was, that the maximum was 2 grains. Upon consulting special treatises, however, M. Kolommine found that 30 cases of anæsthesia were recorded in which the quantity given had varied between 6 and 96 grains. In a similar operation to that he proposed to perform, a French surgeon had given 48 grains. In consequence of these references, it was decided to employ 24 grains, which were introduced into the rectum by instalments. About half an hour after the operation, the first symptoms of poisoning appeared, and notwithstanding the administration of nitrite of amyl, hypodermic injections of ether, oxygen, and artificial respiration, etc., the patient succumbed.

Hypodermic injections of morphine do not seem to have been tried.

Dr. Turnbull has seen symptoms of cocaine poisoning, in subjects of morphine habit, relieved instantly by a hypodermic injection of morphine, and in one case 5 grains of cocaine had been taken hypodermically, within ten minutes; and I have frequently seen the same antagonistic effect produced by a small quantity of cocaine, is an overdose of morphine. It is also to be regretted that strychnine was not tried in this case, for the experiments of Dr. Bignon have shown that cocaine is its physiological antidote, and it is quite possible that the antagonism may be reciprocal. Dogs poisoned by strychnine to the extent of a fiftieth of a grain per pound, can always be saved by keeping up cocaine intoxication, until the elimination of the strychnia. Dr. Briggs, of New York has also suggested the use of cocaine in tetanus and strychnine poisoning.

Literary Notices and Selections.

CROWN AND BRIDGE-WORK.

By A. G. Bennet, D.D.S., Philadelphia, Pa.

(*Continued from page* 744.)

Making and attaching bridges.—I have not space to enter into all the details of making bridges, but will give only some of the leading points. As already stated, the first essential in making a crown is to have the sides of the root parallel; in constructing a bridge the first requirement is to have the teeth or roots and their canals parallel to each other, in order that the crowns and caps may be drawn in an impression without the least fracture, as otherwise a bridge when soldered bridge when soldered cannot be placed in position. The teeth are made parallel either by being regulated or by having their leaning sides trimmed off.

If a bridge is small, or one or two teeth are put into a space, it is a good plan to wax them into position in the mouth with the usual wax and resin, and remove them together in an impression of *investment materia* When a bridge is large, it is better to put the caps and crowns in place, and, after taking a plaster impression, make and mount the models in an articulator. The model for the bridge must be marble-dust and plaster, as it finally forms part of the investment.

Cementing Crowns and Bridges.—A hard, dense, but rather slow-setting zinc-phosphate is the best material for cementing in bridges. Even when it is slow-setting, an assistant will often be required in large cases to fill the caps, while the operator fills the canals. The canal, as before directed, should be *enlarged toward the palatal side*, which, besides giving greater strength to the crown, enables one to introduce the cement so as to drive out the air.

It has been said that for the purpose of setting crown gutta-percha is obsolete. I have found that at least one kind of gutta-percha—the "Premium"—is so nearly a perfect plastic for setting crowns and also many bridges temporarily, and any bandless crown permanently, that I consider it second only to zinc-phosphate. The "Premium" gutta-percha has not only the needed hardness, but can be made soft enough for any purpose, besides having no tendency that I have yet discovered of swelling and splitting the root. But there must not be too much used, requiring the crown to be pressed up with too great force. A good way is to press the softened gutta-percha around the barbed and heated pin with the fingers. The proper amount is obtained by two or three trials, before finally pressing the crown into place. Gutta-percha is especially adapted to cases in which the condition of the roots is in doubt on account of chronic abscess or systemic tendency.

Objections to Bridge-Work.—The art of building dental bridges is too new to be always successful. Even when due regard is had to proper conditions as to number and strength of teeth and their treatment, there are still difficulties to be overcome and problems to be solved, in almost every case, that demand no small degree of skill and experience. Perhaps the chief cause of failure in this new method of substitution is found in the fact that too many are practising it without proper preparation.

Nearly all that one reads or hears against bridge-work is based on the assumption that the real or fancied defects are inherent in the system. Little has been said against the want of proper conditions in the teeth or roots and the surrounding parts, and still less about the lack of skill and experience in the operator. It seems always to be taken for granted that judgment and skill have been exercised in selecting and treating cases that are suitable ; and it is nearly always assumed that the work is well done. In view of the fact that after years of experience even good operators have not infrequently failures in fillings and plate-work. it would be indeed wonderful if bridge-work were always well constructed and successful. One great obstacle to progress and in this kind of work is that it is attempted by too many who cannot make a respectable crown. Again, most of which is generally insisted on respecting the want of strength and permanence applies to a full set anchored on four teeth or roots. Even admitting that such a number of teeth or roots is often insufficient to support an upper or lower denture, I am by no means willing to concede that such is always the fact, for there are cases of relatively small jaws and large, strong teeth in which a bridge could be applied with every element of strength and permanence. It is in just such cases as this—a small, hard, contracted arch—that the greatest difficulty is encountered in adapting a denture, either partial or full, on a plate; and, as just stated, it is in just such cases that bridge-work shows its superiority over plate-work.

The general statement that four teeth cannot bear the strain originally intended to be borne by fourteen or sixteen, assumes that each tooth has just the strength required, and cannot bear any unusual strain. It is true that a long tooth standing alone is liable to lean and loosen, neither of which it can possibly do when acting as a pier of a bridge. A cuspid tooth that is so firmly fixed as to require all the strength of a strong arm to remove it, will certainly bear more than its proportion of the force of mastication. It is *too much movement*, which a bridge effectually prevents, that tends to loosen and detach a tooth or a root.

Though the cuspids are generally the strongest and most firmly fixed of all the teeth, it seems to me that in many cases it is requiring too much of them to support the six anterior teeth, but that of course depends on the width and curvature of the arch, as well as on the articulation. With an edge-to-edge occlusion, in a narrow arch, with little curvature, the cuspids can doubtless readily support the six front teeth. But this is sometimes the weakest bridge that can be made, and in nearly all cases a full denture on four roots has more of the elements of permanence. Again, let me say that it is not *direct pressure* that causes teeth to lean and loosen, but it is *mal-occlusion and want of lateral support.*

It may be well to give in detail some objections which are more or less imaginary:

1. Irritation of bands which pass beneath the gum. If these bands fit closely around the neck of the tooth and are finely polished, as they always should and can be, they will not irritate the soft tissues as much as a metallic approximal filling, which from its position is often difficult to trim away and finish. The bands being made of metal that does not tarnish or corrode, demand only some care and skill as to fit and finish, to be entirely non-irritating. The edge of a cavity, the cervical margin of many fillings, the presence of tartar, all stand in decided contrast to a band as irritants.

2. Metallic contact and pressure on the cementum. This is a clearly fanciful objection, since the much more perishable dentine, unless very defective, bears such contact without injury. Nor can the *pressure* of the band which is passed into place with the fingers be of any consequence. Neither can shocks induced by thermal changes of which the patient is unconscious result in abnormal conditions.

3. That the ledges and spaces above and within the band become the receptacles for food debris and vitiated secretions. If such a state of things occurs it is entirely the fault of the operator, being wholly due to careless and unskillful work.

4. Loosening of the teeth and roots. On the contrary, a bridge tends to counteract this evil—too much luteral movement—that affects teeth standing alone, by giving them firm *lateral support*. A loose tooth must be kept from moving as a first condition to becoming firm.

5. Want of motion. Though the act of mastication subjects the teeth to some degree of lateral movement, the chief feature of this force is *pressure*. No matter how a bridge is made, pressure can never be wanting. "Interstitial motion" is more or less incidential, and is of no benefit to teeth standing alone. What such teeth need is not *lateral movement*, but *lateral support*.

The charge of filthiness has been so often brought against bridge-work that it may be well to glance at this subject a little more closely. This condition must exist either in the bridge proper or about the piers or abutments—in either case being the fault of the operator or the patient. The whole question of close joints in a bridge can be narrowed down to burnishing the backings on the teeth and fitting the bands around the roots; hence it is strictly true to say that a single crown is more liable to be filthy than a bridge or *the part that spans the space*.

(*To be continued.*)

Reports of Societies.

THE ODONTOLOGICAL SOCIETY OF VICTORIA

The ordinary monthly meeting of the Odontological Society of Victoria was held on Thursday, June 2nd. There was a large attendance.

The Hon. Sec. announced that Dr. Rose intended to reintroduce the Dental Act the same as last session. Objection was taken to several clauses, and the discussion of these compelled the postponement of the other business to another date.

GEORGE THOMPSON,
Hon. Sec.

Dental News.

DENTAL HOSPITAL OF EXETER.

The necessary alterations for carrying on the work of this institution at the new premises in Castle-street are now completed, and when the whole of the building is acquired at lady-day will prove more commodious and convenient than those lately vacated in Bedford-circus. Since the commencement of the Hospital in 1880 no less than 27,045 poor persons have been benefited, and 39,073 operations have been performed, particulars of the latter being as follows : Extractions—Children under 14, 8,471 ; adults, 18,560 ; under nitrous oxide or chloroform, 1,640—total, 28,671. Stoppings —With gold, 490 ; white foil, 429 ; osteo, 1,218 : amalgam, 3,761 ; gutta percha, 456—total, 5,453. Miscellaneous, including scaling and irregularity of the teeth, for which in many cases plates have been made—4,774, making a grand total of 38,898. These statistics, which are very large both in proportion to the population of the city of Exeter and to the returns of similar institutions in other towns, will show the immense amount of good annually derived by the poor from this institution. Subscriptions to defray the cost of altering the new premises and to continue the good work are still much needed.

BRIGHTON, HOVE, AND PRESTON DENTAL HOSPITAL.

A SPECIAL meeting of the governors and subscribers of the above institution was held, July 25th, in the Mayor's room of the Brighton Town Hall, under the chairmanship of the President, Councillor J. Ewart, M.D., F.R.C.P. There were also present :—Messrs. John Wood, D. E. Caush, O. A. Fox, J. H. Redman, Walter Harrison, D. Thomas, E. M. Tod, E. L. Norris, W. J. Stephens, J. R. Gwatkin (Hon. Sec.), and Mr. Isaac Wells.—The Chairman called upon Mr. Gwatkin to read the report of the Committee of Management, which was as follows—" The Committee of Management congratulate the supporters of the Brighton, Hove, and Preston Dental Hospital upon the success which has attended its establishment, proof of which is shown in the increased and increasing number of patients, especially in the number of young persons and children. This testifies to the fact that the object of the Institution is gradually becoming better known and more thoroughly appreciated. Since the opening of the Hospital, in July, 1886, several changes in the executive and staff have taken place. The Committee deeply regret the loss of their first President, the late Alderman David Smith, D.L., M.P., but they are pleased to state that they have secured for his successor Dr. Joseph Ewart. They also regret that one of the Consulting Dental Surgeons, Mr. W. Lloyd Poundall, has found it necessary to sever his connection with the Hospital in consequence of failing health, the vacancy has been filled by Mr. John Wood. One of the Dental Surgeons, Mr. E. T. Ash, left Brighton a short time since, his place has been filled by the election of Dr. C. M. Cunningham, while Mr. E. L. Morris succeeds Mr. Wood. Mr. J. R. Gwatkin has kindly undertaken the duties of Secretary hitherto discharged by Dr. Walter Harrison. The Committee here desire to gratefully acknowledge the ability and courtesy shown to the patients by the medical staff. Several persons have, however, been refused treatment on presenting themselves, the ground of refusal in every case being, that the applicants were in a position to pay from their private means for that which they were trying to obtain as a charity. In conclusion, the Committee draw attention to the fact that the strictest economy has been shown in carrying on the work, entire expenses for the year, including the alterations and repairs necessary for adapting the premises to the requirements, having been less than £100, and they confidently trust to the benevolence of the public for additional support in the future, seeing that the doors of the Hospital, which are kept open by voluntary contributions only, are open to all deserving persons, irrespective of nationality and creed." The Hon. Treasurer (Mr. John Wood) next presented the statement of accounts, which showed that the receipts amounted to £83 8s 2d., including a sum of £59 for donations and subscriptions. The expenditure had been £78 16s. 8d., the amount expended on repairs being £23 3s. 6d. There was a balance at the bankers of £4 11s. 6d. The liabilities were £18 7s. 4d., and there was debt on the Hospital of £13 15s. 10d., £10 of which amount was due to the landlord, whose bill had only just been sent in.—Mr. Woods suggested that if they could get new subscribers, they should not ask for subscriptions until the eighteen months had expired. If the premises had not needed repairing, the balance would have been on the right side.—Mr. Walter Harrison, D.M.D., L.D.S., next read the report of the Medical Committee. This report showed great progress. The following number of patient have been received and operations performed :—

	Patients.	Fillings.	Extractions.	Miscellan.
1st quarter, July till Sept. 31, 1886	173	26	168	38
2nd quarter, December, 1886	274	69	246	93
3rd quarter, March, 1887	383	65	234	77
4th quarter, June, 1887...............	384	89	302	123
	1,134	249	951	331

The total number of operations and miscellaneous cases is 1,531. Out of the 1,134 patients, 474 were males and 660 females (including 398 children) ; and, out of the 951 extractions, 157 have been performed under an anæsthetic. There have been but few cases needing a more prolonged agent than the nitrous oxide gas. In the 331 miscellaneous cases 47 have been 'regulating cases,' some of which were of a difficult and tedious character, and a few of the simple ones are completed. The dental staff have issued during the year a code of instructions on the management of the teeth, copied from those used at the National Dental Hospital, London, and have found it prove of great benefit. C. A. Fox, Chairman ; John Wood, Vice-Chairman ; Walter Harrison, Hon. Secretary.—July 1st, 1887."—Dr. Ewart said they had heard the report of the Committee of Management, also the equally satisfactory report from the Treasurer. They now heard from Mr. Harrison, the Medical Secretary, what progress the Hospital had made.—Mr. Thomas then moved "That the following gentlemen be and are hereby elected life governors of the Hospital, viz. : The Mayor of Brighton for the time being, the Chairman of the Hove Commissions, the vicar of Brighton, the vicar of Hove, the vicar of Preston, Dr. Ewart, the Chairman of the Board of Guardians, Alderman Reeves, and Mr. W. Percival Boxall, J.P." Mr. W. J. Stephens seconded, and the motion was carried. Mr. Fox moved that the best thanks of the meeting should be given to the Mayor, Alderman E. J. Reeves, for kindly granting them the use of his room. Mr. Fox expressed his satisfaction with the way in which the work of the Institution was being carried on.—Themotio nwasseconded and carried. Mr. Woods moved a vote of thanks to the President, Dr. Ewart, for presiding over them that evening.—Mr. Isaac

Wells, in seconding the resolution, stated that Dr. Ewart performed his duties in a business-like way, and did all he could to promote the welfare of the Hospital.—The motion was then put and carried unanimously.—Dr. Ewart having briefly replied, the meeting terminated.

BOOKS AND JOURNALS RECEIVED :—

British Medical Journal, British Dental Association Journal, Pharmaceutical Journal, American Journal of Dental Science, Southern Dental Journal, Dental Review, Chicago, The Medical Bullitin, Ohio State Journal of Dental Sciene-Independent Practitioner, Dental Cosmos, Archives of Dentistry, Monattschrift des Vereins, Deutscher Zahnkunstler, L'Art Dentaire.

Communications have been received from—

Mr. Shef. Plymouth; Mr. A. W. Furber, London; Secretary Odontological Society of Victoria.

TO CORRESPONDENTS.

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LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

Lecture II.—*Continued from page* 816.

Malignant Tumours of the Upper Jaw.

Round-celled Sarcoma and Epithelioma.—Round-celled sarcoma or medullary sarcoma is of frequent occurrence in the upper jaw, and, from its vascularity and rapidity of growth, it has often been mistaken for medullary cancer, which in its clinical history it closely resembles. In the majority of cases the disease begins in the antrum; for the protruding masses, which are found in the nose or mouth, are but secondary to a formation within that cavity. One of Mr. Liston's cases is conclusive on the point, the preparation being preserved in the College of Surgeons (1059).

Medullary sarcoma of the jaw closely resembles the same disease in other parts of the body; rapidity of growth, with softness and a tendency to fungate on the part of the tumour itself, being the main characteristics. The direction which the disease takes, and the effects therefore which it produces, will vary in different examples. Frequently it forms a considerable projection on the cheek, causing epiphora from closure of the nasal duct and œdema of the lower eyelid, and in the later stages enlargement of the facial veins, without the least invasion of the hard palate, and with but slight interference with the nostril. The specimen of medullary sarcoma in the College of Surgeons' Museum, 2243, illustrates the point, a large tumour being developed externally. The patient was a man aged 34, who came under the care of Mr. Craven, of Hull, in 1863, with a large rounded tumour of the right cheek, of the size of an orange, extending from the external process of the frontal bone and zygoma above to the angle of the mouth below (almost completely closing the right eye), and from the side of the nose to the ramus of the lower jaw. The colour of the integument was natural. except at the upper part below the eye, where it presented a rather livid appearance, and several veins, not of large size, It was very firm to the touch, but elastic, especially at the outer part. Pressure and handling caused little or no pain. The interior of the mouth on the right side, from the alveolar process (which was concealed by the growth, or embraced in it) to the inside of the distended cheek, presented a large excavated sore of a greyish sloughy aspect and fœtid odour. This part of the tumour was softer to the touch than that which showed itself externally. It did not encroach on the palate which was of the natural width. There were no enlarged glands beneath the jaw. The patient seemed a pretty healthy man. The tumour had been growing seventeen weeks. Mr. Craven excised the tumour, and the patient made a good recovery, but died fifteen months afterwards from a recurrence of the disease. The tumour was rounded and lobed, especially that part which occupied the pterygo-maxillary fossa, and was firm on section. The cut surface was smooth, becoming slightly granular after prolonged exposure. To the naked eye the tumour had the appearance of a malignant growth. Under the microscope, the juice scraped off the cut surface showed no fibrous element, but simply a mass of apparently broken-up cells and granular matter.

On the other hand, the disease may at an early period involve the alveolus and palate, or the nose, and it is these cases which are sometimes attributed to the presence of decayed teeth, or are mistaken for ordinary nasal polypi. Of this a preparation (College of Surgeons' Museum, 2248), which was also from a patient of Mr. Craven (to whom I was indebted for both valuable preparations), is a instance. Here the disease showed itself first in the gums, where it formed a fungating mass, and soon obstructed the nostril. This last symptom was due to a fungus, almost papillary in appearance, which springs from the nasal surface of the tumour. Mr. Craven removed the tumour in March, 1886, but within a year the disease returned and proved fatal.

The disease may extend across the median line and involve portions of both maxillæ, especially the palatine plates. This is not necessarily a bar to operative interference, providing other circumstances are favourable.

Round-celled sarcoma occasionally involves both upper and lower jaws, beginning, I believe, mostly in the upper, and extending to the lower. A man was under my care in 1877 with an enormous swelling of the left side of the face. I ventured, under chloroform, to introduce my finger into the mouth to explore the extent of the growth, but I found it so extensively attached to both upper and lower jaws that removal was clearly impossible. The examination gave rise to sharp hæmorrhage, due to the great vascularity of the growth, and this was checked with some difficulty with the persulphate of iron.

I met with the same implication of the lower jaw, though to a lesser extent, in a lady, from whom I removed the upper jaw in consultation with Dr. Cæsar. In this case the coronoid process was involved, and was removed with bone-forceps; but recurrence of the disease took place, and the patient did not survive the operation four months.

Round-celled or Medullary Sarcoma begins usually in the interior of the lower jaw, producing rapid expansion of it, and ultimately breaking through into the mouth, and also through the skin of the face if allowed to proceed unchecked A specimen in University College Museum (666) is a good example of the disease. The morbid growth projects chiefly on the outer side, and its most prominent part has protruded through the skin, forming an overhanging nummular projection which has an open reticular surface. On the inner side the tumour has invaded the jaw, in places destroying its entire thickness. The growth, however, scarcely projects into the mouth. As seen on the divided surface, it is composed of a soft, granular, yellowish basis, supported and parted into small polyhedral masses by narrow lines of fibrous tissue ; its limit is everywhere definable. Microscopic examination shows the tumour to have all the characters of a large round-celled sarcoma.

Many of the museum specimens hitherto described as medullary cancer are really examples of round-celled sarcoma, and the following case of Mr. Liston's in the College of Surgeons (2230) may be quoted as an instance of the size to which round-celled sarcoma may grow : Part of a lower jaw, including the left condyle, the alveolus of the right first molar tooth, and all the intermediate parts which, with an enormous tumour upon them, were removed by operation. The left ascending portion and side of the jaw as far as the canine tooth are completely enclosed by the tumour, and it covers both surfaces of the jaw as far as the right canine tooth. A round lobulated mass projects downwards and forwards and in the opposite direction the tumour projects into the mouth with a rough fungous surface, in which a displaced molar tooth is seen. The interior of the tumour is indistinctly lobulated, composed of round masses connected by cellular tissue, and of a soft texture; it is invested by a thick capsule.

Epithelioma occurs in the upper jaw in two forms, the squamous and columnar; and the former always begins in the gum or palate. Columnar epithelioma always begins in the antrum, which it often fills, and then secondarily involves the palate ; or it may attack the outer wall only of the antrum, and then protrude on the face. Occurring usually in patients over forty years of age, the disease begins very insidiously, the patient complaining, perhaps, of neuralgia or of uneasiness in the face, but of little more. When the antrum has become distended, the epithelioma is apt to involve the palate by absorption and eventual fungation, and then protrude into the nostril and orbits.

(*To be continued.*)

CLEFT PALATE AND ITS TREATMENT.

By J. Harry Badcock.*

(*Continued from page* 829.)

The constitutional condition of the patient must also be considered, as must any special difficulty, but, if curable, it is rarely that union cannot be accomplished before the age of 12.

Trêlat, however, insists strongly on the necessity of elocutionary training before the operation as well as after, and stigmatises interference before seven years old, as dangerous, compromising, or useless.

There exists considerable difference of opinion as to whether the union of both hard and soft palates, supposing both to be fissured, should be undertaken at the same time.

When this would necessitate so free a division of the soft parts as to endanger the vitality of the flaps, it is advisable to close first that part which can most easily be approximated, whether it be the hard or soft palate, and thus secure a good blood supply for the remainder at a subsequent operation; otherwise it is undoubtedly better to complete the union at one sitting.

Many modifications of Roux's plan have been practised in order to render it more easy of execution and more certain in its results, usually taking the form of incisions through the palate with the object of lessening the traction on the sutures. This was recommended by Dieffenbach, Pancoast, Liston and Sédillot, while Mettauer practised several small incisions with the same object; but to Sir William Fergusson is due the introduction of myotomy as a distinct principle of the operation. The nearest approach to it was made by Mason Warren who divided the anterior pillar of the fauces and the attachment of the palate to the posterior pillar. The following is an outline of Fergusson's operation.

A curved knife is passed through the fissure behind the velum midway between its attachment to the hard palate and the free margin, and about halfway between the velum and the Eustachian tube, and by cutting deeply in this situation the levator palati is divided between the pterygoid plates. The uvula is then drawn forwards so as to put the palato-glossus on th stretch which is snipped across with scissors, and if necessary the palato-pharyngeus also.

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* By a printer s error, L.D.S. was allowed to stand after Mr. Badcock's name, he has not at present taken that diploma.

The edges of the fissure are then pared and when bleeding has stopped the sutures are introduced and the margins of the cleft drawn together and secured. The best material for the purpose is silver wire or silkworm gut as catgut is too quickly absorbed, while horse-hair is useful for the uvula. According to Erichsen the voice does not usually acquire a natural tone, but has a nasal character partly from habits of faulty articulation, which can be corrected by careful instruction; and partly from the contraction upwards of the palate along the cicatrix so that the velum is unable to effect the perfect separation of the nasal and oral cavities. Mason has proposed to remedy this by dividing the soft palate on each side, so as to leave a square and mobile central flap.

Pollock differs from Fergusson only in his mode of dividing the levator palati which he does from the front as follows. The soft palate is drawn forwards by means of a ligature passed through the uvula and then a narrow-bladed knife is passed through the soft palate to the inner side of the hamular process, and the muscular fibres readily divided by raising the handle and depressing the point. This method is analogous to that practised by Sédillot.

In some cases where the cleft is limited to the soft palate which is otherwise well developed division of the muscles may be dispensed with, two deep sutures of thick wire being introduced to take off the strain. This of course is a great advantage, as the palate is not in any way paralysed by the operation.

The closure of fissures extending into the hard palate by operative interference, although it goes by the name of Langenbeck's operation, was first practised by Mason Warren of Boston U.S.A., and the method was introduced to the profession in England by Avery, and subsequently by Pollock. It consists in the separation of the soft tissues from the palatine arch by means of a curved raspatory inserted through a short incision made down to the bone close to the alveolar ridge on each side of the cleft. The periosteum should be separated as completely as possible, as in this case not only are the flaps stronger and thicker, but they may eventually throw out bone and so make the closure more perfect.

If the material at disposal is scanty it may be recruited from the septum nasi, if, as often happen, it is attached to either side. Another point of equal importance, as pointed out by Thomas Smith, is to separate the attachment of the soft palate to the hard.

When this has been accomplished the operation proceeds as before.

In very severe cases, and where the tissues covering the bones are extremely thin, this method is not always successful, and it was this failure that induced Sir W. Fergusson in 1873 to introduce osteotomy, which, although attended with very satisfactory results in his skilful hands has since been practically abandoned as very liable to be followed by necrosis. At the same time we should remember that in the Langenbeck operation sloughing of the soft parts is by no means rare.

The bone was divided longitudinally with a chisel, a series of perforations first made with a bradawl acting as a guide to the direction of the cut (an improvement for which we are indebted to Mason), and the two edges were then forced into contact and held in position by sutures of waxed silk. It was necessary for this operation that the arch of the palate should be high, while if the vomer was attached to either side it had to be divided.

In all cases of operation it is important that the patient should be in a good state of health, especially free from cold, as any secretion in the nares tends to ooze between the edges of the cleft and prevent primary union.

It has not been thought necessary or advisable to enter here into surgical details, such as the time for removal of sutures, and the after treatment of the patient, and only a brief *resumé* of the leading principles has been attempted.

The simplest and most obvious way of closing a hole in the palate mechanically is to plug it with cotton, sponge, or some such soft substance, and this method is probably as old as the disease itself, but the introduction of a definite instrument for the purpose is due to Ambrose Paré who described it in a paper he wrote in 1541. It consisted of a concave metal plate a little larger than the orifice, through which a sponge passed to hold it in position. He subsequently replaced the sponge by a movable stud. This principle, in spite of its obvious disadvantages, was with more or less elaboration of detail the only one practised for over 200 years, until, in 1756, Bourdet pointed out the evils arising from a plug within an aperture caused by disease, especially an expanding plug, and advised arching over the palate with a metal plate held in position by silken ligatures attached to the teeth. In 1820 Delabarre improved on this by substituting metal clasps for the silk ligatures, but is chiefly famous for having introduced the first artificial velum. Since that time many variations have been brought before the profession, three of which only have survived the struggle for existence and merit special attention.

The simplest of the three was first described by Mr. Edward Sercombe, in a paper read before the Odontological Society of Great Britain in 1857, though the principle is much the same as that practised by Snell some years previously. A gold or vulcanite plate is adapted, filling up all gaps with artificial teeth, extending as far back as the boundary of the normal hard palate, and thus covering any fissure that may exist therein.

Attached to its posterior margin by stitches or otherwise, is an artificial velum of elastic rubber. It should be made expressly for the case, with the middle and anterior border moderately thick to give support, gradually tapering off to delicate margins. This apron must extend back sufficiently far for the upward pressure of the tongue to bring it into absolute contact with the wall of the pharynx.

This apparatus fulfils all necessary conditions, is simple in construction, and can be worn with relatively little trouble; but against it must be urged the perishable nature of the velum, its deficiency as a resonator, and its tendency to become offensive if not kept scrupulously clean and frequently renewed. It is, however, a method well adapted for use where the whole of the soft palate has been lost by disease, and no perpendicular movement need be provided for. It is evident that it depends for its utility in both articulation and deglutition on the action of the pharyngeal muscles.

Following on the lines of Hearn, an American, who about 1842 constructed for himself a most ingenious though complicated velum, which turned out a complete success in spite of the great disadvantages under which he laboured. Norman Kingsley, of New York, introduced in 1864 a very perfect form of velum. Roughly speaking, it consists of two laminæ of flexible rubber, one forming the floor of the nose, and the other the roof of the mouth, united by a pedicle accurately fitting, without pressing upon the margins of the cleft. The upper of the two projects backwards far enough to enable it to make perfect contact with the pharyngeal wall when lifted by the palatal muscles. It is all in one piece and perfectly smooth. When fitted to an ordinary plate it follows all the movements of the soft palate. Its chief objection is want of resonance.

(*To be concluded.*)

British Journal of Dental Science.

LONDON, SEPTEMBER 15, 1887.

THE DENTIST'S CAREER.

It may be of service to many to sketch what course must be pursued by young men who seek to become dentists, and who, having achieved this, aim at becoming successful men. It should be clearly understood that a good dentist may not be in any sense of the word a successful man, while, upon the other hand, not any amount of self-assurance, braggadocio, or self-puffing will compensate for a deficiency in knowledge or inexpertness in manipulation. In the first place it is wholly inadvisable to force into dentistry youths who are either biassed in favour of other pursuits, or who evince maladroitness and want of "handiness." He who starts upon his career as a dentist with a stock in trade of mechanical dexterity and resource, and with the possession of ten fingers and no thumbs, has that which will go far to further his ultimate success. This, however, is not all that is needful. The dentist has to deal with men and women; he must never forget this, nor get in the way of regarding his patients as animated blocks fitted inadequately by Nature with teeth, and perfected by himself. A knowledge of human nature is perhaps almost as essential as that of purely professional matters. It enables the owner of it to make allowances for weaknesses, petty vanities, silly pretentiousness, insulting arrogance, and to estimate at their own trifling value the follies and foibles of human nature. We shall indicate in what way professional knowledge may be best attained, but before doing so we offer a few remarks upon the less dealt-with subject of humanising the student, and setting him in the way of acquiring knowledge of the world. The student of dentistry in the year of grace 1887 must either be a gentleman, or as good an imitation of one as his inherited nature and instincts permit. An easy manner without familiarity, a grave demeanour without pedantry, fluency of speech without loquacity, deference without cringing, constitute some of the most important attributes in the *personel* of a professional man. It is a healthy feeling to inculcate into the mind of the would-be dentist that his is a profession and not a trade, that its conduct must be conducted on lines other than commercial. There is little doubt that the student's hospital work will, unless counteracted by social intercourse with intellectual and educated persons, lead him into brusque and undesirable ways, and tend to cultivate in him the *fortiter in re* rather than the *suaviter in modo*. This same social intercourse is of the utmost importance, and lads who have advantage of it have cause to thank throughout their lives the wise arrangement which insured it for them. One way by which such an end is achieved is by placing the youth in the house of cultivated persons, dental, medical, or otherwise professional, who may be willing to supervise this portion of the student's education. Society the student will get, whether he recruits his friends from pot-houses and music-halls, or from the drawing-room and reading club, will depend upon the direction into which his mind is led. Emulation is the natural characteristic of youth, and it is as easy, if parents only knew, to induce rivalry for good as to encourage the ephemeral fame which the "beery" student seeks in loud-voiced ribald songs and profanity. There is another caution with regard to extremes in the opposite direction. The industrious, plodding youth, who, as the expression goes, "reads his head off," turns out an uncanny, unkempt sort of individual, invested it may be with all the dignity of a diploma, but as unfit to practise his art amidst civilised men and women as would be a machine or mechanical monkey. Reading, valuable as it is as a means to an end, should never be allowed to assume the importance of the end itself. A dentist must be practical if he be anything, and further, must be able to apply his knowledge to particular cases. It happens but too often that the encyclopædic youth is devoid of adaptability, and resembles Bret Hart's "Heathen Chinee" in his guilless management of his clients. Knowledge need not make one a prig, but unless it be tempered with the attrition of social intercourse it inevitably tends in that direction. But although we may deprecate too great reliance upon book lore, we are bound to indicate how utterly fallacious and dangerously wrong is a view which so many students are apt to adopt when commencing their career, that there is lots of time for them to acquire a due knowledge of their profession and to spare. The spare time being frittered away, and the work time put off again and again, until habits of loafing and scamping work are too deeply engraved to be lightly erased. To the earnest, intelligent student, the curriculum as now laid down affords not one month too many for the proper acquisition of his profession, and if he thoughtlessly allows the weeks and months to slip by unharvested, he will have bitter cause in after life to regret his thoughtlessness. There is another consideration which should have weight with students, but which as a rule is overlooked altogether. Those with whom he is brought into contact—firstly, the dentist with whom he learns mechanical dentistry, and later, hospital authorities will quietly, and mayhap without remark, observe his demeanour, the zest or repugnance with which he accomplishes his tasks, and the quality of his work and will, when the time comes, select or reject him for the posts of house surgeon, or it may be assistant or partner. Shrewd business men, who have an opportunity of watching a young man's career, will appraise far more highly the sterling qualities of zeal, pluck, and perseverance, than those more brilliant it may be, which culminate in gold medals, prizes, and success in school competitions. In nine cases out of ten, the steady enduring student will be promoted over the head of his more brilliant rival.

Dr. John Stewart, Surgeon Dentist, Dundee.—It is with pleasure that we, as desired by this gentleman, correct an unintentional mistake in our last publication, in which we referred to a monument erected *to his memory.* This, it appears, should have been referred to as a monument erected *by him.* We hope we have not misled any of our readers or the public, and are glad to report that the Doctor is all alive, and trust that his decease will not require to be noticed *again* for a long time. While we considered it right to insert the notice which we did, on the information which we had before us, we have great pleasure in being able to insert the present contradiction.

The Manchester Hospital.—The Victoria Dental Hospital, with its Dental School, which is carried on in connection with Owen's College, has just issued its first Calendar. We are pleased to find it shows such undeniable good work, and to recognise the excellent character of the institution generally. Provincial dental schools are certain to take a high position in the future, and the Dental School of Manchester bids fair to take high rank among them. We commend the Calendar for careful perusal. It will be remembered that the students who came from the Manchester School did well at the last L.D.S. Exam.

The Degeneration of the Teeth.—The *Lancet* says :—"An article recently published in an evening contemporary very properly criticises the theory started in an American dental journal that vegetarian diet would, if universally adopted, produce an edentulous condition of the jaws in the course of a few generations, utterly regardless of the fact that vegetarian races have magnificent teeth. The pathology of this condition is stated to be *disuse* and consequent atrophy of muscles and jaws, then degeneration, and ultimately suppression of the teeth entirely. The comparatively little employment of teeth has something to do with their degeneration in civilised nations admits of no doubt; but how many thousand years must it take to make man edentulous when there are so few evidences of a tendency in that direction. The wisdom teeth are said to be disappearing because they are so often ill-developed and frequently never erupted, and the same remark may sometimes be applied to the upper lateral incisors; but many Egyptian mummies and Etruscan skulls two thousand years of age exhibit the same conditions, yet there is no race of man edentulous. 'Are the teeth of the present century worse than those of the last?' is a question by no means easily answered, for we have only general observations and no statistics to go by. Dental surgery is a modern art, and too much separated from its parents—medicine and surgery—to satisfactorily decide the question. Moreover, dentists only see those people who have defective teeth. Again, much more importance is attached to teeth than in former days, and they consequently receive more attention. It has often been pointed out that the vast improvements in medical and surgical treatment serve to keep alive a large number of weaklings who would otherwise have died, and these often have a progeny of similar frailty, whose teeth we may legitimately conclude partake of the general infirmity. On the other hand, dental disease, if early treated, as is now done, may be to a great extent stamped out. Of course, the teeth of civilised nations are worse than those of savages, although, as has been remarked in our columns, those of the latter are by no means free from disease."

A Chinese Dentist.—Three cents. pays the Chinese dentist's bill. The locality in Hong Kong where dentists most do congregate is called Devils' Row. Chinese tooth powder is made of ground tarantule, dragons' eyes, and horses' sweat. The Chinese dentist never removes the lime deposit from a tooth. He is aware that this deposit materially assists in the decay of the teeth. So says an American contemporary.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

Pulpless Teeth and their Treatment.

By Geo. H. Cushing, Chicago.

Pulpless teeth are not necessarily *dead* teeth. They are frequently so miscalled, which leads to a misconception of their true conditions. The destruction and removal of the pulp of a tooth results primarily in simply depriving the dentine of its chief source of nourishment. It does not at all affect the integrity of the tooth as to its connection with the jaw. If then, after the pulp is destroyed and removed, the tooth can be made so as to be innocuous to the parts with which it is intimately associated, it may reasonably be expected that it will be retained as a useful member almost indefinitely. This being true, the first inquiry is, what is the source of diseased conditions attending specially, pulpless teeth? Septic matter contained within the pulp chamber or canals is the sole irritating cause resulting in pericementitis, alveolar abscess, necrosis of the alveolar process, and sometimes of arge areas of the maxillary bones.

The first step in the treatment of such teeth should be the removal from the pulp chamber and canals of all septic matter. To accomplish this one the various methods of disinfection must be employed.

Subsequently we must see to, 1st, the isloation of the tooth to be treated, by means of the rubber dam or napkins. 2nd, the use of properly adapted instruments for the removal of the contents of the pulp chambers and canals, and 3rd, the thorough disinfection of all instruments before use.

Teeth treated without regard to the above rule may do well, however, in most cases they do very badly and disastrous consequences result.

It is also necessary to make this aseptic condition, permanent.

Gutta-percha may be made to fill all canals with approximate perfection. This should be introduced with the greatest care so that the apical end of the roots may be perfectly closed. There should be no hurry about this part of the operation. A solution of gutta-percha in chloroform of the consistence of thick cream should be used at first and pumped in till there is assurance that it has reached the apical foramen. This should be done with smooth broaches adapted to the size of the canals. Gutta-percha cones should then be used where practicable, and they should be thoroughly packed. In very diminutive canals, or those of difficult access, small gold points filed to fit such canals should be used; after the solution has been well worked in, they should be forced as far into the canals as possible without extending beyond the foramen. They act as wedges to force the gutta-percha to its place, and are useful where nothing else could be used.

The most common cause of failure arises from a want of thorough comprehension of the first proposition, that all these troubles arise from septic poisoning, of the failure to understand what disinfection really is.

But the chief causes of failure after these, are to be attributed to a lack of thoroughness in performing the details of the necessary operations. One man will fail to remove all the debris—while believing he has done so most thoroughly—another will remove most perfectly the contents of the canals, but fail to thoroughly disinfect them before filling, while still another may preform the first two steps in the most admirable manner and yet fail most sadly to properly fill the canals.

Literary Notices and Selections.

CROWN AND BRIDGE-WORK

By A. G. Bennet, D.D.S., Philadelphia, Pa.

(*Concluded from page* 846.)

I will next pass to some disputed points and real objections. It is said to be bad practice to mutilate sound teeth for the purpose of crowning, capping in, or inserting bars to anchor bridges. This charge has certainly a good basis; but it still remains to determine in what mutilation consists. As a rule, the crown of a devitalised tooth is cut off, and that of a vital one capped in—the first method being applied to the front teeth, the last to the back teeth. I think it will be admitted that a *closely-fitted cap-crown over a vital tooth* will not only outlast most fillings, but is the best protection a tooth can have; and I think the end to be attained in thus incasing a tooth will justify the means, when the advantages of bridge-work are better understood.

Whether drilling a cavity into a sound tooth is bad practice or otherwise, depends on the utility and permanence of the mechanism to be anchored by this method. To say that all cutting off or drilling into sound teeth is bad practice, is to give the patient's, rather than the practitioner's view of the matter. When separations were more in vogue than now, some of the best men felt no pangs as they cut large sections from almost or entirely sound teeth. And perhaps the one who objects to incasing a sound tooth would encircle that same tooth with a clasp which has not infrequently destroyed both crown and root. As to cutting off vital teeth—the cuspids for example—that is a proceeding I do not endorse, and yet, at the same time, it is one that I do not presume in all cases to condemn; for there may be, at times, that meeting of conditions which makes a bridge anchored to the cuspids in this way the best denture that can be constructed.

From the foregoing I come to these conclusions:—

1. The art of constructing bridge-work has its basis in dental science.

2. If a bridge injures or diseases the mouth, the cause must be sought, not in the *principle*, but in the *construction*, of the mechanism.

3. As to strength and closeness of joint to resist the forces and exclude the fluids of the mouth, a bridge can be made almost as perfect as a filling, and generally much more durable.

4. Bridge-work is neither for the unskillful dentist nor the careless patient; and the interests of conservative dentistry and this new system alike demand that, until skill and judgment are developed by practice, the efforts of the operator should be confined to small and simple bridges, so constructed as to gain the maximum of strength and durability with the minimum of drilling into or cutting off sound and vital teeth. —*The Dental Cosmos.*

British Journal of Dental Science.

DENTAL STUDENTS' SUPPLEMENT.

SEPTEMBER 15, 1887.

1.—THE LICENSING CORPORATIONS.

Comparative Summary of Regulations for the License in Dental Surgery.

	Royal College of Surgeons. England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons Glasgow.
1—Preliminary Examination	Compulsory on all who commenced their Professional Education after July 22nd, 1878.	Compulsory on all who commenced their Professional Education after August 1st, 1878.	Compulsory on all, except those who have passed one equivalent examination.	Compulsory on all who commenced their Professional Education after August 1st, 1878.
2—Age at which the Candidate may present himself	Twenty-one.	Twenty-one.	Any age, but diploma cannot be granted until he is twenty-one.	Twenty-one.
3—Duration of Professional Education	Four years.	Four years.	Four years.	Four years.
4—Courses of Lectures, etc., to be attended at a recognised School:				
Anatomy	Two Courses, or one Course and twenty Lectures on Head and Neck.	One Winter Course.	One Course.	Two Courses, or one Course and twenty Lectures on Head and Neck

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons Glasgow.
4—COURSES OF LECTURES, &c. (*continued*)—				
Physiology	One Course.	One Course of 50 Lectures.	One Course.	One Six months' Course.
Surgery	Ditto.	One Winter Course.	Ditto.	Ditto.
Medicine........................	Ditto.	Ditto.	None.	Ditto.
Chemistry	Ditto.	Ditto.	One Course.	Ditto.
Materia Medica..............	Ditto.	One three months' Course.	Ditto.	One three months' Course.
Dissections and Demonstrations, or	Nine months.	Nine months.	Two Courses.	Nine months.
Dissections and Anatomy of Head and Neck.........		Nine months. One Course of 20 Lectures.		One three months' Course.
Practical Chemistry and Metallurgy..................	One Course of each.	One three months' Course.	One Course.	One year's.
Practice of Surgery, and Clinical Lectures	Two Winter Sessions.	One six months' Course, or two three months' Courses.	Two Winter Sessions.	Twenty-four Lectures.
Dental Anatomy and Physiology	Two Courses.	One Course.	None.	Twenty Lectures.
Dental Surgery	Ditto.	Ditto.	Two Courses.	Twelve Lectures or Demonstrations.
Dental Mechanics............	Ditto.	Ditto.		
Practical Instruction in Mechanical Dentistry ...	Three years under a competent Practitioner.	Three years under a Registered Dental Practitioner.	Three years under a Registered Dental Licentiate.	Three years under a Registered Practitioner.
Practice of Dental Surgery in a recognised Dental Hospital, or in the Dental Department of a recognised General Hospital...	Two years.	Two years.	Nine months.	Two years
5—FEE	£10 10s. over and above stamp duty.	£10 10s.	£10 10s.	£10 10s.
6—LEAST period during which unsuccessful Candidates are referred to their studies	Six months, subject to the decision of the Board.	Three months.	Six months.	Three months.

7—Particulars of Examination	(A) *Written:* On General Anatomy and Physiology. General Pathology and Surgery (both with especial reference to Dental Practice). (B) *Oral:* On all subjects in the Curriculum Preparations, Casts, and Drawings. Fillings. Cases for Diagnosis, instruments, &c.	*Written and Oral:* First Part—Anatomy, Physiology, Chemistry, and Metallurgy. Second Part — Surgery, Medicine, Materia Medica, and Special Dental subjects.	*Written and Oral:* On all the subjects of the Curriculum. Preparations, Microscopes, and other appliances.	*Written, Oral, & Practical:* 1st Part--Anatomy, Physiology, Chemistry, and Metallurgy. Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files, and Plugging instruments.
8—Date of Examination.	February, June, and October.	First Part—1887. ,, Tuesday, October 4. 1888 ,, January 3. ,, ,, April 3. ,, ,, July 24. Second Part — Following Thursday.	October and November.	1887—October 11—13. 1888—January 17—19. ,, April 5—7. ,, July 17—19.
9—Modified Conditions of Admission to Examinations *sine curriculo:* (*a*) Conditions of eligibility.	Candidates must have been in Practice or have commenced Professional Education prior to September, 1859 (the date of the Dental Charter).	Candidates must have been in Practice, before August 1st, 1878, or apprenticed before August 1st, 1875.	Candidates must be registered Dental Practitioners in practice, before 1878.	Candidates must be registered Dental Practitioners in Practice before August, 1878.
(*b*) Certificates, &c., required.	One of moral character signed by two members of the College or two Licentiates of the Licensing Bodies in the country where the education was received.	One of moral and professional character signed by two Registered Medical Practitioners.	Certificates of moral and professional character signed by two Registered Medical Practitioners and by two Registered Dentists.	Certificates of moral and professional character signed by two Registered Medical Practitioners. Also, declaration by the Candidate that he does not advertise.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
9—Modified Conditions of Admission to Examinations—(*contd.*): (*b*) Certificates, &c., required (*continued*):	Name. Age. Professional address. Date of commencing Dental practice.	Name in full. Age. Address. Date of commencing Dental practice or apprenticeship, and whether if in practice in conjunction with any other and what business.	Name. Age. Address. Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business.	Name. Age. Address. Apprenticed how long, and to whom.
	Whether a Member, Licentiate or Graduate of any British College of Physicians, College of Surgeons, or University, with date of licence, &c. Of what learned societies a Member. Whether in Dental practice separately, or if not, in connection with what business. Whether he has employed Advertisements or Public Notice.	Whether in possession of Degree or Diploma in Medicine or Surgery; if so, what, and date. Whether practising Dentistry in conjunction with any other business, and if so, what.	Professional status.	Professional status.
	Particulars of Professional Education.	Particulars of Professional Education.	Particulars of Professional Education.	Particulars of Professional Education.
(*c*) Manner of Examination	Same as ordinary Examination.	Same as ordinary Examination.		Same as ordinary Examination
Fee	Ten guineas over and above stamp duty.	£10 10s.	£21.	£10 10s.
For further information apply to Secretary.	Edward Trimmer, Esq., Royal College of Surgeons Lincoln's Inn Fields, London, W.C.	Jos. Bell, Esq., F.R.C.S.E. 2, Melville Crescent, Edinburgh.	A. H. Jacob, Esq., Royal College of Surgeons, Dublin.	Alex. Duncan, Esq., Faculty of Physicians and Surgeons, Glasgow.

II.—PRELIMINARY EXAMINATION.

REGULATIONS OF GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a Medical or Dental Student unless he shall have previously passed a Preliminary Education in the subjects of General Education as specified in the following list :—*

1. English Language, including Grammar and Composition.†
2. English History.
3. Modern Geography.
4. Latin, including Translation from the original, and Grammar.
5. Elements of Mathematics, comprising (*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including Simple Equations; (*c*) Geometry, including the first two Books of Euclid, or the subject thereof.
6. Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics.**
7. One of the following Optional Subjects :—
   (*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic; (*g*) Botany; (*h*) Elementary Chemistry.

List of Examining Bodies whose Examinations fulfil the conditions of the Medical Council as regards preliminary education :—

I. UNIVERSITIES IN THE UNITED KINGDOM.

UNIVERSITY OF OXFORD :—

1. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects :—
   Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.
2. Senior Local Examinations; Certificate to include Latin and Mathematics.
3. Responsions.
4. Moderations.
5. Examination for a Degree in Arts.

UNIVERSITY OF CAMBRIDGE :—

6. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects :—
   Greek, French, German, Natural Philosophy, including the Elements of Statics and Hydrostatics.

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* The Examinations in General Education conducted by Universities will be accepted as heretofore, but if in any of these Examinations the subjects of Elementary Mechanics of Solids and Fluids are not included, the Candidate must pass in one or other of the remaining optional subjects instead, and a knowledge of Elementary Mechanics will be required at a subsequent Examination.

† "The General Medical Council will not consider any Examination in English Language sufficient that does not fully test the ability of the Candidate :—(1) To write sentences in correct English on a given theme, attention being paid to spelling and punctuation as well as to composition;—(2) to write correctly from dictation;—(3) to explain all the grammatical construction of sentences;—(4) to point out the grammatical errors in sentences ungrammatically composed, and to explain their nature;—and (5) to give the derivation and definition of English words in common use."

** "This subject may be passed either as a preliminary, or before, or at the first Professional Examination."

7. Senior Local Examinations; Certificate to include Latin and Mathematics.
8. Higher Local Examinations.
9. Previous Examinations.
10. Examination for a Degree in Arts.

UNIVERSITY OF DURHAM :—

11. Junior Local Examination; Certificate to include Latin and Mathematics, and also one of the following optional subjects :—
    Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics and Pneumatics.
12. Senior Local Examinations; Certificate to include Latin and Mathematics.
13. Registration Examination for Medical Students.
14. Examination for Students at the end of their first year.
15. Examinatinn for a Degree in Arts.

UNIVERSITY OF LONDON :—

16. Matriculation Examination.
17. Preliminary Certificate (M.B.) Examination.
18. Examination for a Degree in Arts or Science.

UNIVERSITY OF EDINBURGH :—

19. Local Examination (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
    Greek, French, German, Natural Philosophy.
20. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
    Greek, French, German, Natural Philosophy.
21. Preliminary Examination for graduation in Science or Medicine and Surgery.
22. Examination for a Degree in Arts.

UNIVERSITY OF ABERDEEN :—

23. Local Examinations (Honours Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
    Greek, French, German, Natural Philosophy.
24. Preliminary Examination for graduation in Medicine or Surgery.
25. Examination for a Degree in Arts.

UNIVERSITY OF GLASGOW :—

26. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following subjects :—
    Greek, French, German, Natural Philosophy.
27. Preliminary Examination for Graduation in Medicine or Surgery.
28. Examination for a Degree in Arts.

UNIVERSITY OF ST. ANDREW'S :—

29. Local Examinations (Honours Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following subjects :—
    Greek, French, German, Natural Philosophy.
30. Preliminary Examination for Graduation in Medicine or Surgery.
31. Examination for a Degree in Arts.

UNIVERSITY OF DUBLIN:—

32. Public Entrance Examination.
33. Examination for a Degree in Arts.

QUEEN'S UNIVERSITY IN IRELAND:—

34. Local Examination for Men and Women; Certificates to include all the subjects required by the General Medical Council.
35. Entrance or Matriculation Examination.
36. Previous Examination for B.A. Degree.
37. Examination for a Degree in Arts.

ROYAL UNIVERSITY OF IRELAND:—

39 *Certificate to include the following subjects:—
  (*a*) Arithmetic, including Vulgar and Decimal Fractions.
  (*b*) Algebra, including Simple Equations.
  (*c*) Geometry, including the first two Books of Euclid.
  (*d*) Latin, including Translation and Grammar.
  (*e*) Also one of these optional subjects:—
    Greek, French, German, Mechanical Division of Natural Philosophy.

VICTORIA UNIVERSITY:—

40. Preliminary Examination; Latin to be one of the Subjects.

II.—OTHER BODIES NAMED IN SCHEDULE (A) TO THE "MEDICAL ACT."

APOTHECARIES' SOCIETY OF LONDON:—

41. Examination of Arts.

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF EDINBURGH:—

42. Preliminary (combined) Examination in General Education.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW:

43. Preliminary Examination in General Education.

ROYAL COLLEGE OF SURGEONS IN IRELAND:—

44. Preliminary Examination; Certificate to include Mathematics.

APOTHECARIES' HALL OF IRELAND:—

45. Preliminary Examination in General Education.

III.—EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE "MEDICAL ACT" (1858).

COLLEGE OF PRECEPTORS:—

46. Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a modern Language, having been taken.

EXAMINERS FOR COMMISSIONS AND APPOINTMENTS IN HER MAJESTY'S SERVICE, MILITARY, NAVAL, AND CIVIL:—

47. Certificate to include all the subjects required.

NTERMEDIATE EDUCATION BOARD OF IRELAND:—

48. Junior Grade Examination ... ... 49. Middle ,, ,, ... 50. Senior ,, ,, ...	Certificates in each case to include all the subjects required.

IV.—CERTAIN EXAMINATIONS OF INDIAN, COLONIAL AND FOREIGN UNIVERSITIES AND COLLEGES.

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* The *English* is provided for by the following *Resolution*, passed by the Executive Committee on October 27th, 1876 (*Minutes*, Vol. XIII., p. 358)—

"That as every candidate for the Certificate of the Oxford and Cambridge Schools' Examination Board is required to answer questions in such a manner as to satisfy the Examiners that he has an adequate knowledge of English Grammar and Orthography: this shall be held as conforming to the requirements of the Medical Council in reference to English Language."

III.—EDUCATIONAL BODIES.

LONDON.

DENTAL HOSPITAL OF LONDON, AND LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.

HOSPITAL STAFF.

Consulting Physician—Sir J. Risden Bennett, M.D., L.L.D., F.R.S.

Consulting Surgeon—Christopher Heath, F.R.C.S.

Consulting Dental Surgeons.

Samuel Cartwright, F.R.C.S., L.D.S. Sir John Tomes, F.R.S., F.R.C.S., L.D.S.

Dental Surgeons.

9 a.m.—Monday ... David Hepburn, L.D.S.
,, Tuesday ... R. H. Woodhouse, M.R.C.S., L.D.S.
,, Wednesday George Gregson, M.R.C.S., L.D.S.
,, Thursday... Storer Bennett, L.R.C.P., F.R.C.S., L.D.S.
,, Friday ... Claude Rogers, M.R.C.S., L.D.S., D.M.D., Harvard.
,, Saturday ... F. Canton, L.R.C.P., M.R.C.S., L.D.S.

Assistant Dental Surgeons.

,, Monday ... Leonard Matheson, L.D.S.
,, Tuesday ... W. Hern, M.R.C.S., L.D.S.
,, Wednesday E. Lloyd Williams, L.R.C.P., M.R.C.S., L.D.S.
,, Thursday... Geo. Parkinson, M.R.C.S., L.D.S.
,, Friday ... Lawrence Read, L.D.S.
,, Saturday... C. E. Truman, M.A., M.R.C.S., L.D.S.

Administrators of Anæsthetics.

9.30 a.m.—Monday ... Dudley W. Buxton, M.D., B.S., M.R.C.P.
,, Tuesday ... ... T. Bird, M.A., M.R.C.S.
,, Wednesday ... ... J. Mills, M.R.C.S.
,, Thursday ... . F. Woodhouse Braine, F.R.C.S.
,, Friday... ... ... Frederic Hewitt, M.D.
,, Saturday ... ... G. H. Bailey, M.R.C.S.

Demonstrators.

W. R. Ackland, M.R.C.S., L.D.S.
E. Latchmore, L.D.S.

Medical Tutor—W. Patterson, F.R.C.S., L.D.S.

House Surgeon—H. Williams, L.D.S.

Assistant House Surgeons.

J. F. Colyer. George Seymour, L.D.S.

Demonstrations.—The Medical Officers will make every effort to give Demonstrations on cases selected from time to time, every morning during the Lecture Season; and at the end of the Course those gentlemen who have attended the Demonstrations to the satisfaction of the Medical Officers will be permitted to perform operations at the Hospital under the supervision of the Medical Officers and the House Surgeon.

Dresserships for Cases of Extraction.—The appointments are held for two months, and consist of six Senior Dresserships for extractions under anæsthetics, and eighteen Junior Dresserships for ordinary extractions.

The Senior Dressers will be selected from those pupils only who have entered fully both to the practice and lectures of this Hospital, and also to the Course required by the College of Surgeons for the Licence in Dental Surgery at one of the general Hospitals.

MEDICAL SCHOOL.

The Winter Session will commence on Oct. 3rd, 1887.

The Summer Session will commence in May, 1888.

Lectures.

Dental Surgery and Pathology, by S. J. Hutchinson, M.R.C.S., L.D.S.

Dental Anatomy and Physiology (*Human and Comparative*), by Arthur Underwood, M.R.C.S., L.D.S.

Medical Tutor.

The Medical Tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations. His classes are open to all Students, and are intended to assist those who are preparing for their examinations at the College of Surgeons; generally speaking, to guide and direct the studies of the pupils, and prepare them in the subjects for the Examinations.

FEES.

General Fee for the Special Lectures required by the Curriculum.

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one Course of Metallurgy, £15 5s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £40 to £50.

PRIZES.

The Prize-day will in future be held in July.

1. Prizes are awarded by the Lecturers for the best examinations in the subjects of their respective courses, at the end of the Summer and Winter Sessions.

2. Arrangements have been made for a prize in Operative Dentistry, in the competition for which each candidate is entrusted with the care of a mouth, which he shall, if not impracticable, set thoroughly in order.

3. A prize of the value of five guineas is also given by Messrs. Ash and Sons for the best essay on a surgical subject connected with the mouth.

4. A scholarship of the value of £20 has been founded by Sir Edwin Saunders, and will be awarded to the Student who has obtained the largest number of First Class Prizes during the Winter and Summer Sessions preceding the July in which the award takes place.

Note.—The Medical Committee have resolved "that the holder of the Saunders Scholarship be admitted without additional fee to the extra year of Hospital practice."

The Dean requests that all communications relating to the Medical School may be addressed to him at the Hospital, where he will attend in the afternoons, from Sept. 26th to Oct. 1st, inclusive, from 5 till 5.30 o'clock, or on Wednesday mornings from 10.30 till 12.

Morton Smale, M.R.C.S., L.D.S., L.S.A., *Dean*.

NATIONAL DENTAL HOSPITAL AND COLLEGE, GREAT PORTLAND STREET, W.

HOSPITAL STAFF.

Consulting Physicians.

B. W. Richardson, M.A., M.D., F.R.S.
W. H. Broadbent, M.D., F.R.C.P.

Consulting Surgeons.

Professor Erichsen, F.R.S. Sir Spencer Wells, Bart., F.R.C.S.
Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.

J. Merryweather, M.R.C.S.

Dental Surgeons.

Monday	F. Henri Weiss, L.D.S., Eng.
Tuesday... ...	Alfred Smith, L.D.S., Eng.
Wednesday ...	G. A. Williams, L.D.S., Eng.
Thursday ...	A. F. Canton, L.D.S., Eng.
Friday	Thomas Gaddes, L.D.S., Eng. & Edin.
Saturday ...	Harry Rose, L.D.S., Eng.

Assistant Dental Surgeons.

Monday	Willoughby Weiss, L.D.S., Eng.
Tuesday... ...	R. Denison Pedley, F.R.C.S., Edin.; M.R.C.S., L.D.S., Eng.
Wednesday ...	Marcus Davis, L.D.S., Eng.
Thursday ...	H. G. Read, L.R.C.P., M.R.C.S., L.D.S., Eng.
Friday	C. W. Glassington, M.R.C.S., L.D.S., Edin.
Saturday... ...	W. R. Humby, L.D.S., Eng.

House Surgeon—C. A. Pattinson, L.D.S., Eng.
Assistant House Surgeon—A. S. Jones.

Anæsthetists.

Henry F. Winslow, M.D., Lond., &c.
Henry Davis, M.R.C.S., L.S.A.
James Maughan, M.D., L.R.C.P., M.R.C.S.
J. F. W. Silk, M.D., Lond., &c.
P. Sidney Spokes, M.R.C.S., L.D.S., Edin.

LECTURERS.

Dental Anatomy and Physiology	Thomas Gaddes, L.D.S., Eng. and Edin.
Dental Surgery and Pathology	Willoughby Weiss, L.D.S., Eng.
Dental Mechanics	Harry Rose, L.D.S., Eng.
Dental Metallurgy	W. Lapraik, F.I.C., F.C.S.
Operative Dental Surgery ...	George Cunningham, B.A., D.M.D., L.D.S., Eng.
Dental Materia Medica	C. W. Glassington, M.R.C.S., L.D.S., Ed.
Elements of Histology	Thomas Gaddes, L.D.S., Eng. and Edin.
Demonstrator of Dental Mechanics...	W. R. Humby, L.D.S., Eng.

The Hospital is open for the reception of patients every week-day, from 9 o'clock till 11 o'clock a.m. The House Surgeon and Assistant House Surgeon attend daily, from 9 a.m. till 2 o'clock p.m.

Dresserships in the Extraction Room.

These appointments are held for three months by six senior and six junior students of the Hospital. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice; and they will be under the direction of the Dental Surgeon of the day and of the House Surgeon.

Clinical Lectures and Demonstrations.

Each medical officer will give clinical lectures, when opportune, during the ensuing year. Clinical lectures will also be given from time to time on cases of special interest; and also demonstrations upon the preparing and filling of cavities and other operations upon the teeth and contiguous parts.

Attendance and Examination of Students.

A register is kept of the attendance of students at the Hospital practice and lectures. An attendance of full two years at Hospital practice is required by the College of Surgeons of England; and no schedule will be signed for any lectures of which less than two-thirds have been attended. Class examinations are held frequently during the several courses, to test the progress and attention of the pupils; and at the end of each course of lectures a written examination is held. An insufficient attendance at lectures disqualifies the student for receiving any prize of that year.

Tutorial classes are held by the Dean, to prepare for the final examinations students who have, at this school, complied with the Dental portion of the Curriculum.

LECTURES.

Winter Session, commencing on Friday, Oct. 1st, 1887.

Dental Anatomy and Physiology, by Thomas Gaddes, L.D.S., Eng. and Edin. On Tuesdays and Thursdays, at 6 p.m., during October, November, and December.

Operative Dental Surgery, by George Cunningham, B.A., D.M.D., L.D.S., Eng. On Mondays, at 6.30 p.m., during November and December. (Free to students of the Hospital and College.)

Dental Materia Medica and Therapeutics, by Chas. W. Glassington, M.R.C.S., L.D.S., Edin. On Tuesdays, at 7 p.m., during October November, and December. (Free to students of the College.)

Dental Metallurgy, by W. Lapraik, F.I.C., F.C.S. On Tuesdays, at 7.30 p.m., during January, February, and March.

Dental Mechanics, by Harry Rose, L.D.S., Eng. On Mondays, at 7 p.m., during January, February, and March.

Demonstrations on Dental Mechanics, by W. Robinson Humby, L.D.S., Eng. On Wednesdays, at 7 p.m., during January, February, and March. (Free to students of the College.)

Summer Session, 1888.

Dental Surgery and Pathology, by Willoughby Weiss, L.D.S., Eng. On Mondays and Thursdays, at 6 p.m., during May, June, and July.

Elements of Histology, by Thomas Gaddes, L.D.S., Eng. and Edin. On Mondays and Thursdays, at 7 p.m., during May and June. (Free to students of the College.)

FEES.

General Fee for Special Lectures required by the Curriculum of the Royal College of Surgeons in England. £12 12s.

Fees to Single Courses.	One Course.	Two Courses.
Dental Anatomy and Physiology	£2 12 6	£4 4 0
Dental Surgery and Pathology	2 12 6	4 4 0
Dental Mechanics	2 12 6	4 4 0
Dental Metallurgy	3 3 0	5 5 0
*Operative Dental Surgery	2 2 0	
*Dental Materia Medica	2 2 0	
*Elements of Histology	1 1 0	
*Demonstrations on Dental Mechanics	1 1 0	

Hospital Practice to Registered Practitioners (six months), £7 7s. Ditto (twelve months), £9 9s.

Fee for the two years' Hospital Practice required by the Curriculum, £12 12s. Perpetual Fee, £15 15s.

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* These lectures are free to students of the College who have fully entered for the Special Lectures.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s. Perpetual Fee, £31 10s.

PRIZES.

Five Prizes, in Medals, are open for competition among the students of the College, at the end of each Course of Lectures, on the following subjects, viz.: Dental Anatomy, Dental Surgery, Dental Mechanics, Metallurgy, and Operative Dental Surgery. A prize will also be given for Dental Materia Medica.

Certificates of Honour will be awarded to those Students who show superior proficiency in any of the classes.

The Rymer Gold Medal for General Proficiency, value £5, will be awarded annually to the most distinguished Student of the year. His general conduct and attendance must have been in every respect satisfactory. At the time of the special examination for the Rymer Medal the Student must not hold any qualification. The Medal will be awarded on the understanding that the Student completes the Dental Curriculum.

The Public Distribution of Prizes will take place during the Summer Session.

THOMAS GADDES, *Dean*.

EDINBURGH.

DENTAL HOSPITAL AND SCHOOLS.

Consulting Physician—ALEX. PEDDIE, M.D., F.R.C.P.E.

Consulting Surgeon—JOSEPH BELL, F.R.C.S.E.

Consulting Surgeon Dentist—Dr. JOHN SMITH, F.R.C.S.E.

Dental Surgeons.

CHARLES MATTHEW, L.D.S. Edin.
WILLIAM BOWMAN MACLEOD, L.D.S. Edin.
MATTHEW FINLAYSON, L.D.S. Edin.
ANDREW WILSON, L.D.S. Edin.
GEORGE W. WATSON, L.D.S. Edin.
MALCOLM MACGREGOR, L.D.S. Edin.
J. S. DURWARD, L.D.S.

Assistant Dental Surgeons.

J. S. AMOORE, L.D.S. Eng.
W. WILSON, L.D.S., M.B. & C.M.
J. GRAHAM MUNRO, L.D.S. Edin.
JAMES MACKINTOSH.
J. LINDSAY, L.D.S. Edin.
W. FORRESTER.

Honorary Treasurer and Dean.

WM. BOWMAN MACLEOD, L.D.S., 16, George Square.

DENTAL SCHOOL.

LECTURES.

Dental Anatomy and Physiology (Human and Comparative) by ANDREW WILSON, L.D.S. (Edin.)—These Lectures will be delivered on the evenings of Tuesday and Friday, at 8 o'clock, commencing on 1st November, 1887. The course, consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical specimens, etc.

Dental Surgery and Pathology, by GEORGE W. WATSON, L.D.S. (Edin.)—These Lectures will be delivered on the mornings of Tuesday and Friday, at 8 o'clock, during the Summer Session, commencing May 1888. The Course, consisting of twenty-two Lectures, will be illustrated by preparations, models, diagrams, microscopical preparations, etc.

Mechanical Dentistry, by W. BOWMAN MACLEOD, L.D.S. (Edin).—The Lectures will commence on 9th November, 1887, at 8 p.m., and be continued every Wednesday thereafter till the Course of at least twelve Lectures is concluded.

Practical Mechanics—Assistant Demonstrator, J. Stewart Durward, L.D.S. (Edin.)—In addition to the Systematic Lectures, there will be given, during the Session, Demonstrations on Dental Mechanics, and each Student will be expected to prepare the mouth, take the impression, make the denture, and insert the same in at least four cases. The Demonstrations will be spread over the two years of Hospital practice, and will be given as occasion serves. Students will require to furnish their own hand tools.

In the various classes prizes will be offered for competition.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One Course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstrations, £9 15s.—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The Hospital Practice and Lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other Licensing Bodies. Second Courses of the Lectures, as required by the Royal College of Surgeons of England, £2 4s.

For further information apply to the Dean, who will be found at the Hospital every Wednesday morning between 9 and 10 o'clock.

The Session 1887-8 opens October 18, 1887.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.

Hospital Practice, Two Years	£15 15 0
One Course of 24 Lectures in Dental Anatomy......	9 15 0
,, 22 ,, ,, Surgery	
,, 12 ,, ,, Mechanics ...	
Total.................................	£25 10 0

For further particulars, apply to the Dean, 30, Chambers Street, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL, 56 GEORGE SQUARE.

Hon. Consulting Physician.—W. T. Gairdner, M.D.

Hon. Consulting Surgeon.—Sir G. H. B. Macleod, M.D.

Chloroformists.—Drs. Brown and Mechan.

Dental Surgeons.

J. A. Biggs.
W. S. Woodburn, L.D.S., F.P.S.G.
Rees Price, L.D.S., Eng.
James Cumming, L.D.D., Glas.
J. R. Brownlie, L.D.S., M.R.C.S., Eng.
J. C. Woodburn, M.D.

Assistant Dental Surgeons.

A. B. Young, L.D.S., Glas.
W. M. Adamson, L.D.S., Glas.
W. F. Martin, L.D.S.
J. M. McCash, L.D.S., Glas.
Oswald Fergus, L.D.S., Glas., D.D.S., Phil.

Dental House Surgeon.—

The Hospital is open daily, except Sunday, from 5 p.m. till 7 p.m.

The work of the Hospital is conducted, as far as possible, by the Students, under the supervision of the Dental Officer of the day. Cases of special interest will be made the subject of clinical instruction or demonstration as they occur.

The practice of the Hospital may be entered upon at any time during the Session, and attendance dated therefrom. Fee for the two years' practice required by the Curriculum, £12 12s. Fee for each course of Lectures, £3 3s.

The Dental Students' Society meets once a month in the Committee Room of the Hospital, when papers on subjects of interest are read and discussed by the Members.

DENTAL SCHOOL.

Dental Anatomy and Physiology, Human and Comparative, by J. Cowan Woodburn, M.D.

The Lectures will be delivered in the Summer Session, on the Mornings of Wednesday and Friday, at 8 a.m., and will be illustrated by Diagrams, Preparations, and Microscopic Specimens. Text-Book—Tomes Manual of Dental Anatomy, Human and Comparative.

Dental Surgery and Pathology, by James Rankin Brownlie, L.D.S., Eng., M.R.C.S.

These Lectures are delivered on Tuesdays and Thursdays, during the months of May and June, at 8 a.m., and will be illustrated by recent Specimens, and other Preparations and Drawings, &c. Text Books—Tomes Manual of Dental Surgery; Salter's Dental Pathology and Surgery.

Mechanical Dentistry, by Rees Price, L.D.S., Eng.

This Course will commence on the first Thursday of October, at 8 p.m., and will consist of 12 Lectures, with Practical Demonstrations in Dental Laboratory.

All communications on matters relating to the Dental School should be addressed to J. R. Brownlie, 220, West George Street, Glasgow, who will forward detailed Prospectus of the School.

BIRMINGHAM.

BIRMINGHAM SCHOOL OF DENTISTRY, QUEEN'S COLLEGE.

The teaching of Dentistry is now undertaken by the Queen's College, acting in association with the Birmingham Dental Hospital, and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diplomas of the Royal Colleges.

The Dental Hospital is situated near the College, and is open daily (Sundays excepted). The number of patients treated there during the past year was upwards of 10,000.

The General and Queen's Hospitals offer every advantage for the study of General Surgery and Medicine, the arrangements for which are carried out under the direction of the Birmingham Clinical Board.

LECTURES FOR THE DENTAL CURRICULUM.

Winter Session.

Special Subjects.

Dental Anatomy and Physiology.—J. Humphreys, L.D.S.I., Dental Surgeon to the Dental Hospital. Thursdays at 5 p.m.

Dental Surgery and Pathology.—C. Sims, L.D.S., Eng., Senior Dental Surgeon to the Dental and Queen's Hospitals. Fridays, at 5 p.m.

Dental Metallurgy.—W. A. Tilden, D.Sc., F.R.S. *N.B.*—This class will be held at Mason's College. About ten lectures on this subject will be given on Tuesdays at 2.30 p.m., from October to Christmas.

General Subjects.

Anatomy, Practical Anatomy, Physiology, Chemistry, Medicine, Surgery. These Classes are similar to those in the Medical Department.

SUMMER SESSION.

Special Subjects.

Dental Mechanics.—W. ELLIOTT, L.D.S., Edin., & Dub., F.C.S. Wednesdays, at 5 p.m.

General Subjects.

Materia Medica and Therapeutics.—*Practical Chemistry.*—These Classes are similar to those in the Medical Department.

FEES.

A Composition Fee of 60 guineas, payable in one sum or in two sums, viz., 40 guineas at the beginning of the first year and 20 guineas at the beginning of the second year of studentship, admits to the full curriculum required for the Dental Diploma (inclusive of the necessary Hospital Practice).

N.B.—Further particulars may be obtained on application to the Warden at the College, or to the Hon. Secretary of Surgical Committee, Dental Hospital.

BIRMINGHAM DENTAL HOSPITAL.

71, NEWHALL STREET.

OPEN DAILY AT NINE A.M.

Consulting Physician—ROBERT M. SIMON, M.D.

Consulting Surgeon—JOHN S. S. WILDERS, M.R.C.S.

Consulting Dentists.

THOMAS R. ENGLISH.
ADAMS PARKER, L.D.S., Eng.

Administrators of Anæsthetics.

S. HAYNES, M.B., Ch. M.
C. E. GOSLING, M.D.
T. HOLDSWORTH, M.R.C.S.
J. C. HUXLEY, M.D.
WRIGHT WILSON, F.R.C.S., Ed.
E. DENNIS VINRACE, M.R.C.S.

Dental Surgeons.

H. BREWARD NEALE, L.D.S.I.
F. E. HUXLEY, M.R.C.S., L.D.S.
J. HUMPHREYS, L.D.S.I.
F. W. RICHARDS, L.D.S., Eng.

Assistant Dental Snrgeons.

F. H. GOFFE, L.D.S.
W. R. ROBERTS, L.D.S.

House Surgeon—W. PALETHORPE, L.D.S.

DAYS OF ATTENDANCE.

Mondays	MR. J. HUMPHREYS & MR. GOFFE.
Tuesdays	MR. F. W. RICHARDS.
Wednesdays	MR. GOFFE & MR. ROBERTS.
Thursdays	MR. H. BREWARD NEALE & MR. GOFFE.
Fridays	MR. F. W. RICHARD.
Saturdays	Mr. F. E. HUXLEY.

DEMONSTRATIONS.

Clinical Demonstrations will be given from time to time by the staff on cases of particular interest; also upon the preparing and filling of cavities and other operations upon the teeth and contiguous structures.

Dresserships, &c. (as previously).

Dental Students are required to register their names for Hospital Practice with the Honorary Surgical Secretary, Mr. F. W. Richards, 33, Paradise Street, from whom further information may be obtained.

DENTAL HOSPITAL OF IRELAND.

29, YORK STREET, DUBLIN.

The Winter Session will commence Monday, October 3rd, 1887.

The Summer Session will commence in May, 1888.

Consulting Physicians.

Robert D. Lyons, M.D., M.P.
John W. Moore, M.D.

Consulting Surgeons.

D. H. Bennett, F.R.C.S.I.
William Stokes, F.R.C.S.I.

Consulting Dental Surgeons.

R. H. Moore, F.R.C.S.I.
Daniel Corbett, M.R.C.S.E.

Dental Surgeons.

John A. Baker, F.R C.S.I.
R. Theodore Stack, F.R.C.S.I., D.M.D. (Harv.)
A. W. W. Baker, M.B., Ch.M., L.D.S.
Daniel Corbett, Jun., F.R.C.S.I.

Demonstrator—G. W. Yeates, M.B., Ch.M., L.D.S.

Pathologist—Phin. S. Abraham, F.R.C.S.I.

Registrar—William A. Shea.

In connection with the Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 3rd, 1887.

All Dental Students who have passed their Preliminary Examination are admissible to the Clinical Instruction of the Hospital, after paying Fees and subscribing to the conditions prescribed by the staff.

In addition to Clinical Instruction, Courses of Lectures will be given through the year on Dental Surgery, Dental Anatomy, Mechanical Dentistry, and Metallurgy, by the following Lecturers:—Dental Surgery: A. W. W. Baker, M B., Ch.M. Dental Anatomy: Daniel Corbett, Jun., A.B., F.R.C.S.I. Mechanical Dentistry: R. Theodore Stack, M.D., F.R.C.S.I., D.M.D., Professor of Dentistry, Royal College of Surgeons. Metallurgy: Charles Cameron, M.D., F.R.C.S.I., Professor of Chemistry, Royal College of Surgeons.

These lectures are intended to supplement the lectures given in the Medical Schools, and give to the Dental Student in Ireland the opportunity of fulfilling in his own country the conditions of curriculum required by the different licensing bodies in the United Kingdom.

The lectures on Mechanical Dentistry and Metallurgy will be given during the winter; those on Dental Surgery and Anatomy during the summer months. In addition to the longer courses, special courses, of three months' duration, will be given to Surgeons about to join the Army and Navy, or to practise in the Colonies.

Amongst the advantages of the School is the Mechanical Laboratory, where each Student is allotted his own bench, and every effort is made to assist him in Mechanical Dentistry. This year, in addition to practical instruction in the details of Gold, Dental Alloy, Vulcanite, Celluloid, and continuous Gum Work, special demonstrations will be given in the Mechanical treatment of Cleft Palate, by Mr. Theodore Stack; in the Treatment of Dental Irregularities, by Mr. A. W. W. Baker; and in the various methods of inserting Pivot Teeth, by Mr. Daniel Corbett, jun.

Regulations as to Fees and other conditions are the same as exist at the Dental Hospital of London, Leicester Square. Any further information can be obtained from the Registrar of the Hospital, or

R. Theodore Stack, Dean.

MANCHESTER.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER

SCHOOL OF DENTISTRY IN CONNECTION WITH THE OWENS COLLEGE.

Hon. Treasurer.
F. W. Travers.

Hon. Secretary.
Henry L. Knoop.

Consulting Physicians.
Sir Wm. Roberts, M.D., F.R.C.P.
J. E. Morgan, M.D., F.R.C.P.
Henry Simpson, M.D., M.R.C.S.
D. J. Leech, M.D., F.R.C.P.
D. Lloyd Roberts, M.D., F.R.C.P.

Consulting Surgeons.
E. Lund, F.R.C.S.
W. Whitehead, F.R.C.S.
F. A. Heath, M.R.C.S.
T. Jones, F.R.C.S.
J. Hardie, F.R.C.S.

Consulting Dental Surgeons.
H. Campion, M.R.C.S.
S. A. Rogers, L.D.S. Eng.
Parsons Shaw, D.D.S.

Dental Surgeons.
Monday Morning—H. Planck, L.D.S.I. ; J. Renshaw, L.D.S.I.
Monday Evening—E. P. Collett, L.D.S. Eng. ; H. Wood, L.D.S.I.
Tuesday Morning—T. Tanner, L.D.S. Eng.
Wednesday Morning—J. H. Molloy, L.D.S.I. ; G. O. Whittaker, L.D.S. Eng.
Wednesday Evening—W. Dykes, L.D.S. Glasgow ; H. A. Mann.
Thursday Morning—W. Dougan, L.D.S.I. ; G. Nash Skipp, L.D.S. Eng.
Friday Morning—G. G. Campion, L.D.S. Eng. ; W. Simms, L.D.S.I.
Friday Evening—L. Dreschfeld, L.D.S.I. ; W. Headridge, L.D.S.I.
Saturday Morning—J. W. Dunkerley ; W. Smithard, L.D.S.I.

Administrators of Anæsthetics.
Wednesday Morning—J. Prince Stallard, M.B.
Saturday Morning—Alexander Wilson, M.R.C.S.

Dean.
H. Planck, L.D.S.I.

House Dental Surgeon.
H. J. Moore, L.D.S. Eng.

Total Fees.—A Composition Fee of £50, payable in two sums of £25 each at the commencement of the first and second year of studentship, admits to the necessary lectures at the Owens College.

Fee for Dental Hospital practice, £12 12s.
Fee for Royal Infirmary practice, £10 10s.
The entire fee for the necessary curriculum is £73 2s.
The Calendar for 1887-88 will be sent on application.

LIVERPOOL.

DENTAL HOSPITAL, MOUNT PLEASANT.

Northern Branch—15, GREAT MERSEY STREET.

Consulting Physician—Thomas Robinson Glynn, M.D., M.R.C.P. Lond.

Consulting Surgeon—Frank T. Paul, F.R.C.S. Eng.

Consulting Dental Surgeons.
W. J. Newman, L.D.S., R.C.S.I.
Wm. H. Waite, L.D.S.I., D.D.S.

Honorary Dental Surgeons.

Thomas F. Austin.
John N. P. Newton, L.D.S. Eng., D.D.S.
Frederick Rose, L.D.S. Eng.
Edward A. Councell, L.D.S. Eng.
R. Edwards, L.D.S. Eng.
H. N. Hindley, L.D.S. Eng.

Honorary Assistant Dental Surgeons.

M. Alexander, L.D.S.I.
E. A. Davies, L.D.S.I.

Honorary Demonstrator of Operative Dental Surgery.
Thomas Mansell, L.D.S. Edin.

Chloroformist—Henry Briggs, M.B.

Stipendiary Dental Surgeons.
Head Hospital—C. T. Stewart, L.D.S.I.

Northern Branch—Charles B. Dopson, L.D.S.I.

Registrar—Frederick Rose, L.D.S. Eng.

This Hospital is a School of Practical Dental Surgery, duly recognised by the Royal College of Surgeons, and open to all Students of Dentistry, under such regulations as shall be determined by the Committee of Management.

The Hospital is open daily for the admission of patients from 8.30 till 10 a.m., and from 5.30 to 8 p.m. Northern Branch open 9 to 10 a.m., and 6 to 7 p.m.

Fees for Hospital practice, £5 5s. per annum, or a composition fee of £8 8s. for two years' Hospital Practice required for the curriculum to Students of the Medical Faculty, University College, Liverpool, and pupils or apprentices of registered Dentists.

Further information may be obtained by applying to the Honorary Secretary, W. L. Jackson, c, Queen Insurance Buildings, 10, Dale Street.

PLYMOUTH.

DENTAL HOSPITAL, OCTAGON.

Physician—C. Albert Hingston, M.D., Lond.

Surgeons.

Christopher Bulteel, F.R.C.S.
Connell Whipple, M.R.C.S.

Consulting Dentist—F. A. Jewers, M.D.S.

Dental Surgeons.

W. V. Moore, L.D.S., Eng.
C. S. Bate, F.R.S., L.D.S., Eng.
F. H. Balkwill, L.D.S., Eng.
Ernest E. Jewers, L.D.S, Eng.
Ernest Edward Jewers, L.D.S.E.
Henry William Mayne, L.D.S.I.
Louis E. Sexton, L.D.S., Eng.

Treasurer—Alfred Payne Balkwill.

The Dentists attend each day, at 9 a.m, except Sundays.

DENTAL SCHOOL.

Certificates of attendance on the practice of this Dental Dispensary are recognised by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognises the lectures delivered at the Dispensary.

Pupils of any of the Dental Surgeons of the Plymouth Dental Hospital, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society, may attend the Hospital on the day of such practitioner as may agree to accept such pupil, or pupils, on the payment of £1 1s. per annum to the Institution.

LECTURES.

On "Dental Physiology," by C. SPENCE BATE, F.R.S., L.D.S., R.C.S.E.

On "Dental Anatomy," by F. H. BALKWILL, L.D.S., R.C.S.E.

On "Dental Mechanics," by W. V. MOORE, L.D.S., R.C.S.E.

Fee to Lectures, one Course, £7 7s.

Fee to Lectures, double Course, £12 12s. (required for Diploma).

Fee to Dental Practice at Hospital, £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma), 22 Guineas.

Further information may be obtained from the Secretary, Mr. E. G. BENNETT, at above address.

EXETER.

DENTAL HOSPITAL.

Consulting Surgeons.

A. J. CUMMING, F.R.C.S., Eng. | WM. CLAPP, F.R.C.S., Eng.

Dental Surgeons.

J. T. BROWNE-MASON, L.D.S., Eng. | T. G. T. GARLAND, L.D.S.I.
S. BEVAN FOX, L.D.S., Eng. | J. M. ACKLAND, M.R.C.S., L.D.S., Eng.
HENRY BIGING MASON, L.D.S., Eng.
S. MUNDELL, L.D.S., Eng.

Surgeon Administrators of Anæsthetics.

JOHN MORTIMER, M.B., Lond. | ARTHUR C. ROPER, M.R.C.S, Eng.

Hon. Secretary and Curator.

W. MAY.

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental diploma.

The Hospital is open daily (Sundays excepted), and patients are admitted between the hours of 9 and 11 a.m.

Pupils of any Member of the Staff or other registered Practitioner (being a Life or Annual Governor) are permitted to attend the practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of Five Guineas annually to the Funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon forthe day.

Number of cases treated in 1886, 6068.

PRIVATE SCHOOL OF ANATOMY, PHYSIOLOGY, AND SURGERY;

And also professional subjects, including Chemistry, Physics, Materia Medica, Botany and Pharmacy; Medicine Obstetrics, Diseases of Women and Children; Comparative Anatomy, Embryology, etc.

Demonstrations and Lectures by Mr. Thomas Cooke, F.R.C.S., senior Assistant Surgeon to the Westminster Hospital, and other Masters.

By decision of the Royal College of Physicians and Surgeons, gentlemen rejected at their Anatomical and Physiological Examinations (Primary R.C.S. or Second Conjoint) can get "signed up" from this School for the hree or six month's work they are now required to put in before re-txamination.

The School meets the requirements of two classes of students, namely:—

I. Students preparing for the usual Primary and Pass Examinations of the several Licensing Bodies.

II. Qualified Practitioners and advanced Students, *i.e.*, gentlemen wishing either to obtain some of the Higher Qualifications, or to compete for Appointments in Her Majesty's Army, Navy, and Indian Medical Services. For these special Classes are provided. (See separate Prospectus.)

The instruction is given on the dissected and undissected body, with normal and pathological specimens, microscopical preparations, chemical, physiological, and surgical apparatus, splints, &c, The Operations of Surgery are performed on the dead body. Arrangements can be made for the attendance on midwifery cases, and for practical work in the dispensary.

The School possesses a good collection of physiological apparatus, allowing of the demonstration to the class of the great bulk of the Practical Exercises in Physiology by Professors Burdon-Sanderson, Foster, and Langley, and other authors; also chemical apparatus. allowing every student, not only to see, but to repeat for himself, the analysis of the principal food-stuffs, and fluids and solids of the body, and also all the usual reactions, tests, &c. Gentlemen preparing for the Higher Examinations (M.B., Lond., Fellowship of the Royal College of Surgeons) receive special instruction in the more difficult subjects, and have the advantage of personally repeating (with certain restrictions as to the careful use of the physiological apparatus) the practical exercises in Physiology by Professors Burdon-Sanderson, Foster, and Langley, &c., above alluded to.

A Chemical Laboratory has been provided; and the necessary collections for the practical teaching of Chemistry, Materia Medica, and Pharmacy have been placed in the hands of an experienced teacher of these subjects.

IV.—GENERAL HOSPITALS.

CHARING CROSS HOSPITAL.

Dental Surgeon—J. FAIRBANK, M.R.C.S., who attends at the Hospital, three days a week, at 9 a.m., for Dental operations. A course of Lectures on Dental Surgery is also given during January, February, and March.

The fee at this hospital for the L.D.S. Course is £42 2s., which may be paid in two instalments; this includes the Library fee of £2 2s., for which the student enjoys all the privileges of general students, which are as follows:

1st. They pay a proportionately lower amount of fees.

2nd. They alone are eligible for the following offices and appointments:—Resident medical officers, resident surgical officers, resident accoucheur, assistant demonstrators, pathological assistant, clinical clerks, dressers, dentist's assistants, etc.

3rd. They are admitted to the use of the library and reading-room and museum.

4th. They are admitted, without additional fee, to the clinical and pathological demonstrations, and enjoy other advantages.

5th. They alone are entitled to compete for the scholarships.

Two prizes are awarded annually in the class of Lectures on Dental Surgery, of the value of six guineas and four guineas respectively.

Students may serve as assistants to the Dental Surgeon for a period of three months.

The attention of Dental students is drawn to the re-arrangements which have been made in the hours of lectures, so as to enable students to attend the practice at the Dental Hospital of London. Charing Cross Hospital is within three minutes' walk of the Dental Hospital of London.

For further information apply to the Dean, Dr. J. Mitchell Bruce, or to the Secretary, who attends daily at the office of the Medical School, Chandos Street, Charing Cross, between the hours of 10 and 4.

LONDON HOSPITAL MEDICAL COLLEGE.

Dental Surgeon—Ashley Barrett, M.B., Lond., M.R.C.S., L.D.S.

The Council of the College of Surgeons recognise the Dental Department of the London Hospital as a school at which may be obtained the Dental Practice necessary to qualify a student for the Examination of the Dental Diploma. Dental Students may obtain the General Medical Education (that is, apart from certain Special Lectures to be attended at a Dental School) and the Dental Practice, necessary for the Diploma, at the London Hospital School, on payment of Forty Guineas.

A course of Lectures on the Anatomy and Pathology of the Teeth and Dental Surgery will be delivered by Mr. Ashley Barrett, on days which will be duly announced. It comprises the treatment of Dental Irregularities, of Dental Caries, and such matters in connection with the subject as are of interest to the Medical Practitioner. Mr. Barrett gives practical instruction on Tuesdays, at 9 a.m., which is open to all students of the School and Hospital, and can be attended by gentlemen who are not pupils on payment of a fee of Ten Guineas.

In addition to the Lectures a series of Demonstrations of the simpler modes of filling Teeth will be given during the month of June. The Demonstrations will refer to the mode of Manipulating Amalgam and Gutta Percha fillings, the preparation of Cavities, the filling of Teeth containing vital and dead pulps, the mode of relieving pain after filling, and the instruments needed for these operations.

A Dental Assistant is elected every three months, without any additional expense. The terms of the office date from the first Tuesday in January, April, July, and October. In selecting Candidates, priority will be given to those who have attended the greatest number of Lectures on Dental Pathology and Surgery, and have also been the most punctual in attendance in the Dental Department on Tuesday mornings.

Further information may be obtained on application to Mr. Munro Scott, the Warden, Medical College, London Hospital.

KING'S COLLEGE, STRAND, W.C.

Special arrangements are made for Dental Students. Apply to the Dean.

MIDDLESEX HOSPITAL.

Consulting Dental Surgeons—Sir J. Tomes, F.R.S., F.R.C.S., L.D.S., and J. S. Turner, M.R.C.S., L.D.S.

Dental Surgeon—W. Storer Bennett, F.R.C S., L.R.C.P., L.D.S.

Assistant Dental Surgeon—W. Hern, M.R C.S , L.D.S.

In the present year (1887) the acquisition of a site in Cleveland Street has enabled a much needed extension of the Buildings to be carried out. The additions include an additional Lecture Theatre, a Physiological Laboratory and Class Room, a Students' Room, and a Luncheon Room. A new and commodious Library will also be opened shortly.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of Lectures—which are arranged to fit in with the work at the Dental Hospitals—and Hospital Practice on payment of a fee of 40 guineas, in one payment, or by instalments of £30 on entrance, and £15 at the beginning of the second Winter Session.

A short course of Lectures on Dental Surgery will be delivered during November and December by the Lecturer on Dental Surgery, Mr. Storer Bennett. The Lectures will be supplemented by practical Demonstrations, which will be given every week during the Winter and Summer Sessions by the Dental Surgeon and Assistant Dental Surgeon. Students of the Hospital free, others pay a fee of 2 guineas.

Further information may be obtained from A. Pearce Gould, Esq., the Dean, or from the Resident Medical Officer at the Hospital,

GUY'S HOSPITAL MEDICAL AND SURGICAL SCHOOL.

Dental Surgeon—H. MOON, M.R.C.S., L.D.S.
Assistant Dental Surgeon—F. NEWLAND PEDLEY, F.R.C.S., L.D.S.

Dressers are appointed to the Dental Surgeon, and hold office for two months.

Practical instruction in Dental Surgery is given every Tuesday, Thursday, and Friday, at 1.30 o'clock. A certain number of cases of cleft palate, perforate palate, irregularities, lost portions of jaw, &c., are constantly under treatment for the instruction of students, the necessary apparatus being supplied at the expense of the Hospital.

In the Summer Session a short course of Lectures introductory to the practice of Dental Surgery is delivered by Mr. Moon.

Application respecting the School may be made to the Dean, Dr. F. Taylor.

ST. GEORGE'S HOSPITAL.

Dental Surgeon—A. WINTERBOTTOM, F.R.C.S., L.D.S.

Mr. Winterbottom attends at the hospital on Tuesdays and Saturdays at 9 a.m.; his assistant daily at 9 a.m. and at 1 p.m.

A course of Lectures on Dental Surgery is given by Mr. Winterbottom in the Summer Session. Free to students of the hospital.

Fee for general subjects in Dental Surgery, including Practical Chemistry, £55. Payable in two instalments; first year, £30; second year, £25.

Further information can be obtained by application to Dr. WHIPHAM, Dean of the Medical School.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

Dental Surgeons—MR. EWBANK, MR. PATTERSON.
Assistant Dental Surgeons—MR. ACKERY, MR. MACKRELL.

The Dental Department of the Hospital is open on Tuesday and Friday mornings at 9 o'clock. The practice of the department is recognised by the Royal College of Surgeons.

The fee for general subjects for Dental students for the first winter is £33 2s. 6d., for the first summer £33 2s. 6d., or a single payment of £66 3s.

This hospital is the oldest and one of the largest in London, and among many advantages which it offers to the student is that provision is made for their residence in the College, on the recommendation of a medical officer of the Hospital. For the terms of board and residence, and all other information regarding the College, applications should be made, either personally or by letter, to the Warden of the College, Dr. Moore.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—H. HOWARD HAYWARD, M.R.C.S., L.D.S.

Practical instruction in Dental operations is given on Wednesdays and Saturdays, at 9.30 a.m. Dressers are appointed, who hold office for three months. Also a special course of Lectures on Dental Surgery.

Fee for the course, £2 12s. 6d.

For prospectus and further information apply to the Dean, who may be consulted in his room daily at 3.30 p.m.; or to the Medical Superintendent at the Hospital.

GEORGE P. FIELD, Dean of the School.
SIDNEY PHILLIPS, M.D., Sub-Dean.

ST. THOMAS'S HOSPITAL.

Dental Surgeon—CHARLES EDWIN TRUMAN, M.R.C.S., L.D.S.
Assistant Dental Surgeon—

Gentlemen may receive instruction in diseases of teeth, are appointed dressers, and can undertake operations, subject to the supervision of the Dental Surgeons, Tuesdays and Fridays at 10 a.m.

Numerous cases of irregularity of the teeth, stoppings, and the application of artificial appliances, are undertaken during the term.

The fee for attendance on the *general* subjects required of the students in Dental Surgery, is, for the two years, £55, or, by instalments, £50 for the first year, and £10 for the second year.

Dental practice, one year, two guineas; perpetual, three guineas.

For further information apply to G. Rendle, Esq., M.R.C.S., Medical Secretary.

WESTMINSTER HOSPITAL.

Dental Surgeons—J. Walker, M.D., M.R.C.S., L.D.S., and A. Morton Smale, M.R.C.S., L.D.S.

Dr. Walker attends at 9.15 a.m. on Wednesdays, and Mr. Morton Smale on Saturdays at 9.15 a.m., for practical demonstration of diseases and operations on the teeth.

The fee for attendance on the Dental Practice is £2 2s. for three months, and £3 3s. for six months. The whole of the General Lectures and Surgical Practice required for the Dental Diploma of the College of Surgeons can be attended for £50, in one sum on entrance or for two sums of £32 10s. and £20, payable at the beginning of each year.

Dr. Walker will deliver a course of Lectures on Dental Surgery and Pathology on Wednesdays, in October, November, and December, at 9.30 a.m.

Classes in Metallurgy in its application to Dental purposes, Dental Anatomy and Physiology, and in Dental Mechanics, will be formed should a sufficient number of Students give in their names.

The Calendar will be forwarded on application to Dr. Donkin, Dean of the School, who will afford every information.

SCHOOL OF MEDICINE, SURGEON'S HALL, EDINBURGH.

The fees required for students attending general subjects necessary for the curriculum of the Royal College of Surgeons, Edinburgh, are £38 10s.

HARVARD UNIVERSITY, DENTAL DEPARTMENT, BOSTON, MASS, U.S.A.

The Sessions of this School begin the last Thursday in September, and end the last Wednesday in June, making nine months of practically continuous work in each year.

General Anatomy, with Dissections, Physiology, and General Chemistry, are the studies of the first year. Of the second year they are Operative and Mechanical Dentistry, Dental Materia Medica and Therapeutics, Oral Surgery, and Surgical Pathology. The Student can also attend gratuitously all the *lectures* in any other department of the University.

The infirmary of the Massachusetts Hospital furnishes abundant facilities, averaging 8,000 operations, of which a large proportion consist of filling teeth, every year.

The University degree, D.M.D. (Dentariæ Medicinæ Doctor) is conferred on all who fulfil the requirements.

The diploma is recognised by the English Medical Council.

For the first year a student is a member of the school, the fee is 200 dols.; for the second year, 150 dols.; and for any subsequent year, 50 dols.

For further information and catalogues, address: Thomas H. Chandler, Dean, Hotel Bristol, corner of Boylston and Clarendon Streets, Boston, Mass., U.S.A.

THE DENTAL COLLEGE OF THE UNIVERSITY OF MICHIGAN.

The Thirteenth Annual Session of this Institution will commence on the 1st of October, and close on the last Wednesday of June, thus making a course of nine months. A preliminary examination, having reference to general educational attainments, is required.

The Student in this department will receive instructions in Anatomy, Physiology, Pathology, Chemistry, Materia Medica, Therapeutics and Surgery, from the Professors of their respective branches in the *Department of Medicine and Surgery* of the University, when lectures commence and continue the same as with the Dental College.

FACULTY OF THE DENTAL DEPARTMENT.

President.
J. B. Angell, LL.D.

Principles and Practice of Operative Dentistry.
J. Taft, M.D., D.D.S.

Anatomy and Physiology.
Corydon L. Ford, M.D., D.D.S.

Lecturer on Oral Pathology and Surgery.
J. N. Martin, Ph.M., M.D.

Clinical Dentistry.
J. A. Watling, D.D.S.

Prosthetic Dentistry.
W. H. Dorrance, D.D.S.

Demonstrator of Clinical Dentistry.
Miss E. A. Nallock, D.D.S.

Demonstrator of Prosthetic Dentistry.

Special instruction will be given in Dental Pathology, Oral Surgery, Dental Therapeutics, and Diseases of Women and Children, with reference to the teeth.

Students should be promptly present at the College on Thursday, September 30th, to make the preliminary arrangements for entering upon regular work.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age. He must furnish evidence of good moral character.

He must devote three years to the study of his profession. He must attend two full courses of lectures in the Dental College, or one course in some College having an equal standard of requirements and the last one here, and we recommend that he attend three courses regularly.

He must sustain an examination satisfactory to the Faculty in all the branches taught.

FEES AND EXPENSES.

The fees, which must be paid in advance, are as follows :—

Residents of Michigan.—Matriculation, $10.00 ; annual dues, $25.00.

Non-Residents.—Matriculation, $25.00 ; annual dues, $35.00.

Graduation Fee.—For all alike, $10.00. The admission fee is paid but once, and entitles the student to the privilege of permanent membership in any department of the University. The annual due is paid the first year and every year thereafter while at the University.

For further particulars, address the Dean of the Dental College, Ann Arbor, Mich.—J. Taft, Dean.

IV.—SCIENTIFIC ASSOCIATIONS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN, 40, LEICESTER SQUARE.

OFFICERS FOR 1887.

President.—CHAS. S. TOMES, F.R.S.

Vice-Presidents.

RESIDENT.
HENRY SEWILL.
S. J. HUTCHINSON.
J. H. MUMMERY.

NON-RESIDENT.
ANDREW WILSON (Edinburgh).
RICHARD ROGERS (Cheltenham).
G. C. MCADAM (Hereford).

Treasurer—JAMES PARKINSON.

Librarian—FELIX WEISS.

Curator—STORER BENNETT.

Editor of the Transactions—FREDERICK CANTON.

Honorary Secretaries.

ROBERT H. WOODHOUSE (Council).
WILLOUGHBY WEISS (Society).
C. J. BOYD WALLIS (for foreign correspondence).

Councillors.

RESIDENT.
MORTON A. SMALE.
ARTHUR S. UNDERWOOD.
E. G .BETTS.
J. F. CORBETT.
THOS. A. ROGERS.
SIR EDWIN SAUNDERS.
JOHN FAIRBANK.
DAVID HEPBURN.
ASHLEY W. BARRETT.

NON-RESIDENT.
J. R. BROWNLIE (Glasgow).
J. H. WATFORD (Eastbourne).
F. H. BALKWILL (Plymouth).
GEORGE BRUNTON (Leeds).
E. APPERLEY (Stroud).
J. H. REDMAN (Brighton).

EXTRACTS FROM THE BYE-LAWS.

Objects and Constitution of the Society.

This Society is instituted for the encouragement and diffusion of knowledge in Dental Surgery, and for the promotion of intercourse among members of the Dental Profession.

The Society shall consist of resident, non-resident, corresponding, and honorary members *

1. The resident members shall consist of gentlemen practising as Dental Surgeons in London or within ten miles of General Post Office, St. Martin's-le-Grand.
2. The non-resident members shall consist of gentlemen practising as Dental Surgeons, residing beyond ten miles from London.
3. The corresponding members shall consist of distinguished gentlemen practising as Dental Surgeons residing in the Colonies of Great Britain or foreign countries.
4. The honorary members shall consist of distinguished practitioners of Dental Surgery who have retired from practice, of distinguished medical practitioners, and of gentlemen distinguished in any department of science.

Persons who advertise in the public journals, or by circular, either their profession or their professional attainments or public appointments, or anything relating to their mode of practice or charges, or who expose for public inspection specimens of operative or mechanical Dentistry, or conduct their practice in any way which, in the opinion of the Council of this Society, is derogatory to the respectability of the profession, shall not be considered eligible for nomination as members.

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* The following bye-law has come into force : " That on and after November 1st, 1882, candidates for the Resident, Non-Resident, or Corresponding Membership of the Society, shall not be eligible unless they practise as Dental Surgeons, or are interested in the progress of Dental Surgery, and are also Licentiates in Dental Surgery or qualified Practitioners of Medicine or Surgery; or possess such a Diploma or Degree as, in the opinion of the Council, will qualify them for the Membership of the Society."

No person being the proprietor of a secret remedy, or holding a patent relating to the requirements of Dental practice, shall be a member of this Society.

Election and Admission of Resident and Non-Resident Members.

Recommendations for resident members shall be signed by two members from personal knowledge, and by two or more from general knowledge. Recommendations for non-resident members may be signed by one member only from personal knowledge, and by two or more from general knowledge.

All recommendations for resident or non-resident members shall be submitted to, and approved of, by the Council, before being proposed to the Society for ballot.

Contributions of Members.

Every person elected a resident member shall pay three guineas as an admission fee, and an annual subscription of two guineas, *in advance.*

Every person elected a non-resident member shall pay two guineas as an admission fee, and an annual subscription of one guinea, *in advance.*

The entrance fees and first annual subscription shall be paid on admission, and the subsequent annual subscriptions in the month of November in each year ; but new members proposed at or after the annual meeting, shall not be required to pay any subscription for the current session.

Ordinary Meetings.

The Ordinary meetings of the Society shall be held on the first Monday in each month, from November to June, both inclusive, at 8 p.m. precisely, except in the month of January.

Each member may introduce two visitors at these meetings, on writing the visitors' names in a book to be kept for that purpose. The same visitors will not be admitted more than three times during one session.

Annual General Meeting.

The annual general meeting of the Society for the election of the officers and councillors, &c., shall be held on the evening of the second Monday in January every year.

Society's Transactions.

The Transactions of the Society, under the designation of "Transactions of the Odontological Society of Great Britain," shall be printed at such times and in such manner as the Council shall direct.

The "Transactions" shall be presented to all resident and non-resident members of the Society who have paid their annual subscriptions.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

30, Chambers Street, Edinburgh.

President—W. H. Williamson, M.D., L.D.S., D.D.S.

Vice-Presidents.

Malcolm Macgregor, L.D.S., Edin. | J. Moore Lipscomb, L.D.S., Eng.

Treasurer—G. W. Watson, L.D.S., Edin.

Secretary—John S. Amoore, L.D.S., Eng.

Curator and Librarian—J. Stewart Durward, L.D.S., Edin.

Council.

W. Bowman Macleod, L.D.S., Edin. | Walter Campbell, L.D.S., Eng.
James Mackintosh, Esq. | Rees Price, L.D.S., Eng.

Ordinary Meetings.—The Society meets on the second Thursdays of November, December, January and February, and the 13th March.

EXTRACTS FROM THE CONSTITUTION AND LAWS.

Name and Objects.

The Society shall be named the "Odonto-Chirurgical Society," and shall have for its objects the Promotion and Diffusion of Knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by Members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of medicine.

Ordinary and Honorary Members.

The Society shall consist of Ordinary, Honorary, and Corresponding Members:

The Ordinary Members shall consist of Gentlemen practising as Dentists in Great Britain, and of Medical and Surgical Practitioners interested in Dental Surgery.

The Honorary and Corresponding Members shall consist of Gentlemen practising Dentistry in Great Britain, in the Colonies, or in Foreign Countries, and of retired Dental Practitioners in Britain, as well as such Medical or generally Scientific men as may have distinguished themselves in connection with Dental Surgery.

The Ordinary Members shall have vested in them the Government of the Society, and all cases not otherwise specified shall be decided by them by a majority of votes by ballot if required.

Obligations of Members.

No Member shall be permitted to advertise his profession, his modes of practice, or his charges, either in the public journals or by circular. They shall not be permitted to expose specimens of their work for public inspection, nor to carry on their practice in connection with any other business, nor to hold any patent relating to Dental practice, nor to conduct themselves in any way which the Society may consider derogatory to the Profession, so long as they continue Members of the Society. But Members who practise in towns other than that in which they reside shall be allowed to intimate their visits; such intimations being subject to the approval of the Council.

Applications for Membership.

Candidates for admission as Members of the Society shall be recommended by an Ordinary Member, and the recommendation seconded by another. After being approved by the Council, such recommendation shall be read to the Society at an Ordinary Meeting, and shall lie over to the next, when the Candidate shall be balloted for, when two-thirds of the Members present must be in his favour to secure his election.

Contributions.

Ordinary Members residing within a ten-mile radius of the City shall pay an Entrance Fee of One Guinea, and One Guinea of an Annual Subscription in advance. All other Ordinary Members shall pay an Entrance Fee of One Guinea, and Ten Shillings and Sixpence of an Annual Subscription. All Annual Subscriptions to date from the 1st March preceding the Candidate's admission.

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THE BRITISH DENTAL ASSOCIATION.

(*Incorporated June 3rd,* 1880.)
40, LEICESTER SQUARE, LONDON.
President—J. R. Brownlie, L.D.S., Eng.,
President-Elect—Daniel Corbett, M.R.C.S., L.D.S., Eng.
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MORTON SMALE, M.R.C.S., L.S.A., L.D.S., Eng., *Hon. Secretary.*

Extracts from Memorandum of Association and Bye-Laws.

The objects for which the Association is established are the promotion of Dental and the allied sciences, and the maintenance of the honour and the interests of the Dental profession by

"The Periodical meetings of the Members of the Association and of the Dental profession generally, in different parts of the country.

"The publication of a periodical journal, and by

"The maintenance of the spirit and provisions of the Dentists' Act, by such lawful means as may be necessary, etc., etc."

Extract from Bye-Laws.

A person who is registered in the Dentists' Register shall be eligible for election as a member of the Association, provided that he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars, describing modes of practice, or patented or secret processes; or by the publication of his scale af professional charges.

Any registered practitioner not disqualified by any Bye-law, who shall be recommeded as eligible by any three Members of the Association (the recommendation of one being from personal knowledge), and who has signed the appended form of application for admission and agreement as to terms of Membership, may be elected a Member by the Representative Board or by a committee appointed for that purpose by that Board, or by the Council of a recognised Branch.

The subscription is One Guinea per annum, and each member is entitled to a copy of the Journal of the Association monthly, and to attend the Annual Meetings of the Association.

Forms of application for membership may be had of the Hon. Sec., 40, Leicester Square, London, W.C.

BENEVOLENT FUND OF THE BRITISH DENTAL ASSOCIATION.

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BRITISH DENTAL ASSOCIATION.
WESTERN BRANCH.

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Hon. Sec.—Henry B. Mason, L.D.S., Eng.

A person who is registered in the Dentists' Register shall be eligible for election as a Member of this Branch, provided he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any Dental practitioner who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any three members of this Branch, may be elected a Member by the Council, and shall be admitted a Member of the British Dental Association.

THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

President—F. Bullin, J.P., L.D S., Chester.
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J. Renshaw, L.D.S.I., Rochdale.
A. M. Matthews, L.D.S., Bradford
G. Brunton, Leeds.
W. H. Jewitt, Liverpool.
D. A. Wormald, L.D.S.I., Bury.
I. L. Pike, Sheffield.
W. E. Harding, Shrewsbury.
J. C. Storey, Hull.
H. Blandy, Nottingham.

Composed of Members of the British Dental Association who reside in the Midland and North-Western Counties of England, and of Associates who can fulfil the conditions laid down in the Bye-laws. The Annual Meeting takes place in April.

Extract from Bye-laws.

2. The Association shall consist of Members and Associates. No one shall be eligible for membership who is not already a member of the British Dental Association. Any registered Practitioner of good character, who does not conduct his practice by means of the exhibition of Dental specimens, appliances or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars describing modes of practice; or patented or secret processes; or by the publication of his professional qualification or scale of professional

harges, may be admitted as an Associate. Associates shall be entitled to all the privileges of the Branch Association, but shall not be entitled to vote or hold office therein.

3 Any Member of the British Dental Association may be elected a Member of the Branch by the Council of the Branch, at any of their Ordinary Meetings, on his sending a written application for election to the Secretary of the Branch.

4. Any registered Practitioner who can subscribe to the conditions laid down in Bye-law 2, and who shall be recommended as eligible by any three Members or Associates, may be elected an Associate by the Council, on his forwarding the recommendation and his subscription to the Honorary Secretary of the Branch.

BRITISH DENTAL ASSOCIATION—*Eastern Counties Branch.*

OFFICERS FOR 1887-8.

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Norfolk, Suffolk, Cambridgeshire, Essex, Lincolnshire, Northamptonshire, Huntingdonshire, Bedfordshire, and Hertfordshire.

BYE-LAWS.

1. Any person registered in the Dentists' Register shall be eligible for election as a member of this Association provided he be of good character, that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection ; or by means of public inspection ; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes ; or by the publication of his scale of professional charges ; or by the assumption of any title, degree, or diploma not recognised by this Association.

2. Any registered Practitioner, not disqualified by any bye-law, who shall be recommended as eligible by any three members of the Association (one being from personal knowledge) may be elected a member by the Council, the election to be by ballot, three black balls to exclude.

THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE, W.C.

President—Mr. F. Canton, M.R.C.S., L.R.C.P., L.S.A., L.D.S.

Vice-Presidents.

Mr. H. Parkinson, L.D.S. Mr. H. Lloyd Williams, M.R.C.S., L.D.S.

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Mr. C. C. Robinson, L.D.S.	

The object of the Society is the consideration of matters generally and specially appertaining to Dentistry. The affairs of the Society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator, and nine other members. The President is chosen from the past Students who have obtained their degree of L.D.S. ; the Vice-Presidents from past Students with or without qualification.

Any gentleman wishing to become a member, must be proposed and seconded at one meeting, and be ballotted for the next ; one black ball in four to exclude. The entrance fee for ordinary members is half-a-crown, and there is an annual subscription of the same amount.

Ordinary meetings are held at 7 p.m. on the second Monday in every month, from October to March inclusive. The annual meeting for the election of officers and other business is held in January of each year.

Every member has the power of introducing one visitor, not being a Student of the Hospital or School, to the evening meetings, with the consent of the President. Visitors are allowed to take part in the discussion of the papers and clinical cases.

There is a Library in connection with the Society, the Curator discharging the duty of Librarian.

The Council offer a prize, value £3 3s., at the end of each year, for the best paper read before the Society during that year.

STUDENTS' SOCIETY OF THE NATIONAL DENTAL HOSPITAL AND COLLEGE.

President—F. Henri Weiss, Esq., L.D.S., Eng.

Vice-Presidents—Willoughby Weiss, Esq., L.D.S., Eng. Charles W. Glassington, Esq, M.R.C.S., L.D.S., Edin.

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Hon. Curator and Librarian—James F. Rymer, M.R.C.S., L.D.S., Eng.

This Society, which was established March 15, 1878, was constituted for the encouragement and diffusion of knowledge in Dental Science, and for the promotion of intercourse among its Members; and all Students of Dental Science are eligible for Membership. All Candidates for Membership must be approved by the Council before being proposed to the Society for election. The Entrance Fee is 2s. 6d., and the Annual Subscription 2s. 6d., to be paid in advance. The Ordinary Meetings of the Society are held on the first Friday in each month, from October to June, both inclusive, at 8 p.m. precisely. Each Member may introduce two visitors, not being Students of the Hospital or College, but the same visitors may not be admitted more than three times during one Session.

APPOINTMENTS.

S. C. Gibbons, L.D.S., Eng., J. H. Redman, D.D.S., L.D.S., and E. M. Tod, L.D.S., Eng., to be Consulting Dental Surgeons to the Brighton Dental Hospital.

British Journal of Dental Science.

No. 473. LONDON, OCT., 1, 1887. VOL. XXX.

SIR JOHN TOMES ON RESIGNING THE PRESIDENTSHIP OF THE REPRESENTATIVE BOARD OF THE BRITISH DENTAL ASSOCIATION.*

AFTER referring to the cause of his compulsory retirement from the Representative Board—infirm health—Sir John Tomes said :—

"Retrospect is the province of the aged, for they alone possess the personal knowledge of passed events by the progressive occurrence of which the present position has been gained. Had any one of these events been different, the present result would have been other than it is. Very shortly few if any of us will remain who practised in the time when a reasonable amount of dental knowledge and skill was limited to a few individuals, and those were for the most part personally unknown to each other. To these survivors of an earlier state of things, the change for the better has exceeded in degree their most exalted expectations. In those days the rank and file was recruited from persons of low educational advantages, and whose skill was limited to the work-room standard ; now the profession is strengthened by the entrance only of persons of education and of tested skill and experience. The student, when he has gained his diploma is more perfectly educated than is the member of any other profession of like standing, for during his professional education he has performed again and again all the operations, and determined (under supervision) the treatment of every description of case he will in after years be called upon to treat; an advantage enjoyed by no other class of professional students.

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* A portion of an address presented to the Representative Board at the Annual General Meeting, 1887. We were compelled, through want of space in our "Students' Number," to delay publishing this address.

"Amazement is the feeling that takes possession of the mind, when those who have lived through and seen the great changes, think of the present state of perfection to which dental education has attained. To the younger members of the profession this may seem a strong statement, but they have not the personal knowledge of that which once was, wherewith to compare that which now is. They have not felt the well-nigh intolerable difficulties that stood in the way of obtaining an adequate amount of knowledge and skill necessary to the rightful discharge of professional duties. Difficulties which, by the very weight of their pressure, induced the reformatory efforts which, steadily pursued through a generation, have brought us to our present prosperous position. Aided by the legislature, the progress has been continuous and by no means slow. The dental charter granted to the Royal College of Surgeons of England may be taken as the foundation stone of the preconceived structure, the beneficial working of which made the Dentists' Act an achievable result. No reasonable person can doubt that both charter and Act have been in the highest degree useful and even necessary to the development of dental surgery as it is now known and practised in this country.

"That each has imperfections needs no saying, for it is not in the power of man to foresee and guard against all possible contingencies. But the defects are limited to minor and relatively unimportant provisions, such as will be cured by the mere lapse of time alone, while other so-called defects are faults (perhaps not at the time wholly avoidable), in the construction put upon the phrases of the Act by the Executive. One of these faults has been pointed out by the Master of the Rolls, and concurred in by the Lords Justices at the Court of Appeal. The educational provisions and the rules for the subsequent registration of the licentiates, constitute the substance and meaning of the Act. The penal clauses are of inferior importance, for the educated always have it in their power to surpass the uneducated in the pursuit of any subject requiring the exercise of knowledge and skill. The examination of apparently exceptional cases will generally reveal disastrous errors on the part of those whose success lay in their own hands; and the success of charlatans is very generally much over-rated by those who complain of their presence as competitors for practice. We should be stupid indeed if we could not profit by experience, and those who were actively concerned in framing the Dentists' Act would—were the opportunity to recur—amend some of the minor details. The critic is often a non-constructive person who assumes a position of unproven superiority when he challenges defects in work he has taken little or no part in producing.

"Judged from the standpoint of results, the Dentists' Act has, to my mind, been a great success. Who can justly say that the educational results have not been in the highest degree beneficial to the public and the profession? and it will, in respect to fulfilling its purpose, compare favourably with any other educational Act. Furthermore, it requires that a list of the qualified, with a statement of the character of their qualifications, shall be printed each year, and provides also for the ready punishment of persons who pretend to the possession of such qualifications not having them. Beyond this, Parliament firmly declines to go. The utmost limit in the way of protection to which the legislature will give its sanction has been, I believe, reached in our Act; and, if we were made the judges to the extent to which protection should be given to a profession not our own, I feel sure that we should not extend the limit beyond the line drawn by Government for the protection of the dental profession.

"Parliament has drawn a hard line separating the qualified from the unqualified, over which it will not allow the latter to pass. The penal clauses of the Medical Act of 1858 are much less clearly stated, and much less stringent than are the corresponding clauses of the Dentists' Act. Yet the promoters of the Medical Act, 1886, were unable to introduce clauses of greater stringency for the remedy of an acknowledged defect. In my opinion, we shall exercise good sense by abandoning all thoughts of attempting the gain of greater penal powers, and by working with liberality of purpose within the lines of our sufficient Act."

LECTURES ON DISEASES OF THE JAWS.

By CHRISTOPHER HEATH, F.R.C.S., Hunterian Prof. of Surgery and Pathology.

LECTURE II.—*Concluded from page* 854.

MALIGNANT TUMOURS OF THE UPPER JAW.

In the Museum of the College of Surgeons is a preparation (2235) of the right superior maxilla with a soft white tumour filling the antrum and protruding into the nose and orbit, which I removed from a gentleman aged 51, who five years before the operation noticed "lumps in the hard palate," which were lanced, but never healed, though appearing to diminish in size. About four years later his right nostril became blocked, and there was protrusion of the eye. I removed the jaw very freely, but recurrence took place at the back of the orbit, and it became necessary to remove the eyeball in order to clear out the growth effectually, but time showed that a cure had not been effected. The morbid growth in this case is unattached to the wall of the antrum, except behind, where it extends into the substance of the gums and palate. Mr. Eve's microscopic examination shows it to consist of closely-packed and very tortuous columns of small round epithelium; a few of them had a lumen around which the cells were arranged in a regular manner as in tubular glands. The stroma was composed of sarcomatous tissue. This case is one of unusual duration for an example of pure epithelioma; the fact that the tumour is a mixture of epithelioma and sarcoma probably gives the clue to it, although the subsequent history is distinctly that of epithelioma.

Epithelioma occurs in the lower jaw in two forms, the columnar and the squamous. Columnar epithelioma occurs in connection with multilocular cysts and with single cysts, and has been already fully discussed. Squamous epithelioma is the more common form of disease, and is found both in connection with ulceration of the gums and as a tumour of the jaw. The following, under my own care, is a typical case of the latter form of the disease. A man, aged 56, first noticed a swelling in his face four months before his admission ; he used to have toothache, and had lost all the teeth behind the left lateral incisor in the lower jaw. When first noticed, the tumour was about the size of a small walnut, and was situated on the left ramus near the angle of the jaw. It was not painful or tender to the touch, but grew steadily. On admission to University College Hospital, there was on the left side of the lower jaw a rounded, smooth swelling, which extended from the middle of the vertical ramus of the jaw to the level of the hyoid bone below and forwards nearly to the symphysis. The swelling was firm and inelastic, and the skin over it was normal, except that it was slightly reddened over the anterior half of the growth. Inside the mouth the growth projected as a large red roundish mass, with the surface flattened and sloughy. It reached as far backward as the vertical ramus, and encroached upon the floor of the mouth. I removed the tumour with the portion of the lower jaw implicated, by dividing the lower lip in the median line and carrying an incision beyond the angle of the jaw. The jaw was sawn to the right of the median line, between the incisor and the canine teeth, and the tongue being secured with a thread, the bone was disarticulated on the left side with some little difficulty, owing to the tumour breaking away from the upper part. Consequently the coronoid process was nipped off with the bone-forceps, and left *in situ*, and an elevator was used to lift the condyle out. There was very little bleeding, and only one or two ligatures were applied. The wound was sprinkled with iodoform, and brought together with wire sutures, drainage being provided for.

The patient made an uninterruptedly good recovery, and left the hospital in thirty days. The part removed consisted of the remains of the left half of the bone, the part between the vertical ramus and the central incisors being almost entirely destroyed by the growth, only a shell of bone remaining at each end. On section the growth was of a dead white colour where oldest, with a firm margin advancing into the surrounding tissues. It consisted of a fibrous stroma, in which were scattered numerous leucocytes and spindle cells, with large masses of squamous epithelium cells, many of which were collected into bird's-nest groups. The specimen is in University College Museum.

The general characters of squamous epithelioma of the jaw are well seen in the foregoing case. Rapidity of growth, with destruction of the bone, and fungation into the mouth are the leading characteristics, and nothing but early and free removal offers any chance of relief. In the above case the jaw in its upper part was apparently healthy, but I had no hesitation in disarticulating so as to be thoroughly beyond the disease, and I also went well into healthy bone at the point of section, so as to avoid, as far as possible, all risk of recurrence.

The question of the necessity for the removal of large portions of bone in cases of cancer of the lower jaw may be here referred to. Some surgeons maintain that in a case of cancer it is necessary to amputate at the joint above the disease in order to obtain immunity. But, if this doctrine is to be carried out fully, the entire lower jaw should be removed for disease of one side, for though the bone was originally developed in two halves, there is nothing to prevent malignant disease spreading across the symphysis, as was seen in the case of epithelioma under my own care. The lower jaw is liable to be invaded by epithelioma spreading to it from the tongue and lip, and may be affected by both epithelioma and sarcoma developed in the neighbouring lymphatic glands.

On more than one occasion I have found epithelioma of the anterior part of the tongue attached to and infiltrating the central portion of the lower jaw, and have been obliged to cut out the incisive region with good result. The most remarkable case was one of a man, aged 52, who was under my care in 1875 with extensive epithelioma of the front of the tongue, which was firmly fixed by its tip to the lower jaw, with great enlargement of the submaxillary glands and infiltration of the sub-maxillary tissues. He suffered acutely from occipital pain, which it is difficult to explain and was willing to submit to any operation for relief

I divided the jaw on each side one inch and a half from the symphysis, and then removed the front of the tongue, the centre of the jaw, and all the sublingual structures, with the galvanic *écraseur* (University College Museum, 1023). The patient made a rapid recovery, the two portions of jaw fell together, and are now united at an angle by tough fibrous tissue, and the man, who was alive and well in 1883, has covered the deformity by growing a beard.

In January, 1879, I performed nearly as extensive an operation on a man, aged 68, removing the lower jaw from the right incisors to the left angle, for extensive epithelioma of the jaw and floor of the mouth, the patient making a good recovery and being in perfect health two years later, but dying with recurrence of the disease eventually (*Lancet*, November 20th, 1880).

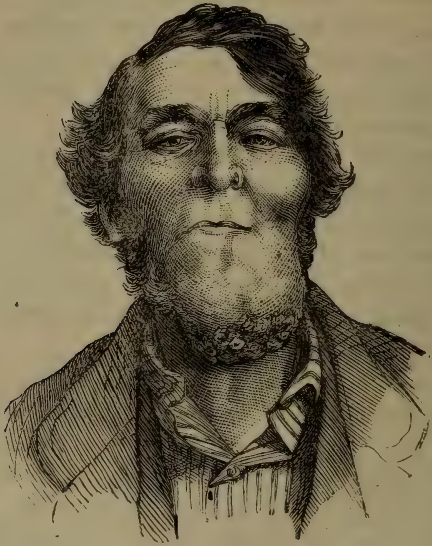
In the cases of recurrent epithelioma of the lip, when the disease shows itself in the submental glands, which become adherent to and implicate the bone, it is possible to give relief, for a time at least, by sawing out the portion of bone involved, as I did in an old man in May, 1876. In two instances I have sawn off the chin only, without breaking the line of the alveolus,or opening the cavity of the mouth. Fig. 40 shows the first patient on whom I performed the operation.

Fig. 41 shows an epitheliomatous growth secondary to that of the lip, which has attained the unusual size of the tumour in the present case. It is unusual to find so extensive an involvement of the bone, as in this instance, with such slight glandular affection, the secondary growths generally appearing in the glands under the jaw, and involving the bone later and to a much less extent.

During the last few years a new disease affecting the jaws, as well as other parts of the body, has been recognised under the name of Actinomycosis, and the College Museum is fortunate in possessing two specimens occurring in the lower jaw and one in the upper jaw of the heifer, which I now bring before you.

2254 B is the lower jaw of a heifer affected with actinomycosis. All that portion of the jaw containing the grinding-teeth is greatly enlarged by a growth projecting prominently from its lower border and both its surfaces. A vertical section has been made through the jaw immediately on the inside of the the teeth, and another vertical section through the growth projecting from its outer surface. The sections show that the growth is composed of a soft, pale, medulla-like substance, punctated or dotted with numerous minute cavities. It infiltrates widely, and in some places has completely penetrated the jaw. On pressure, worm-like masses of pultaceous material could be expressed from the puncta or small cavities above noted. This material, under the microscope, was found to contain large numbers of actinomyces. The mucous membrane of the gum on the outside of the teeth is thickened, and passing down through it into the substance of the bone are two sinuses, into which portions of glass rod are inserted.

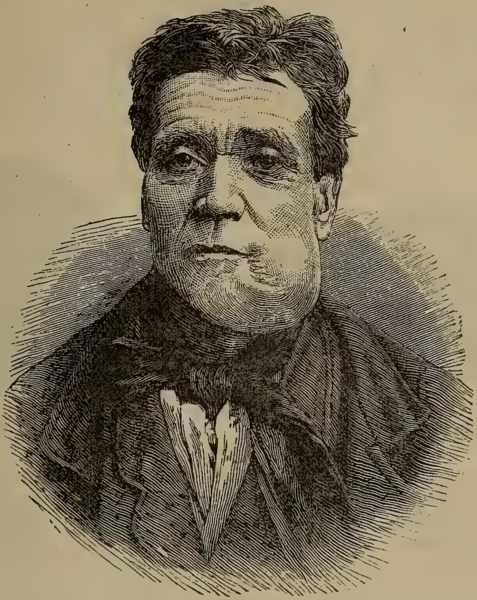
Fig. 40.



The animal was 18 months old. An enlargement of the right side of the lower jaw was noticed nine months before it was killed. No disease of any other part was found.

2254 C is the right upper jaw of a heifer affected with actinomycosis. The external surface is bulged outwards, and the antrum is filled with the growth.

Fig. 41.



2254 D is the left lower jaw of the same animal, showing a rounded expansion of the bone, due to an actinomycotic growth.

The disease began in the upper jaw eight months before the animal was killed. An enlargement of the lower jaw had only been noticed a few weeks.

These valuable specimens were presented to the College Museum by Alfred Lingard, Esq., in 1886.

These tumours have to the naked eye the appearance of ordinary sarcomatous growths, but under the microscope show at various points masses of the vegetable fungus characteristic of the disease.

For the following figures I am indebted to a paper by Dr. Markham Skerritt, of Clifton, which was published in the *International Journal of Medical Sciences*, January, 1887.

The disease has invaded both the upper and lower jaws in man, but no case of that particular form of the disease has, so far as I am aware, been met with in this country, and my information on the subject is, therefore, second-hand.

In 1877 Bollinger first described as a new fungoid disease a peculiar affection of the jaws of cattle, which up to that time had been looked upon by some as scrofuluos disease, by others as osteo-sarcoma. According to his description the affection consists in the development of a whitish tumour, which starts from the posterior part of the alveolus, or from the spongy part of the bone, distends the bone and bursts through it, generally outwards, destroying all the tissues in its course. The substance of the irregular nodulated tumour is for the most part soft and juicy, and shows on section a large number of yellow, abscess-like points. Microscopically the tumour consists of granulation-tissue with minute abscesses here and there, in which lie peculiar yellowish bodies about the size of a hemp-seed. These bodies are also found in similar tumours in the tongue, pharynx, larynx, and mucous membrane of the stomach, and in the neighbouring lymphatic glands. When examined more minutely they present a gland-like, mulberry appearance, consisting of closely-inter-

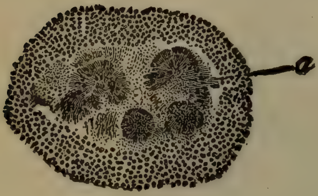


Fig. 42.

A group × A Zeiss (3-5ths inch) shows probably the earliest stage of growth: each separate collection of fungus consisting of fine filiments radiating from a common centre.

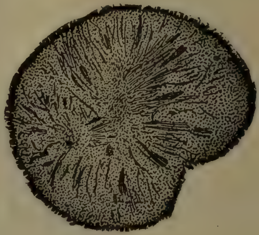


Fig. 43.

The portion of fungus marked a Fig. 42 × D Zeiss (1-7th inch nearly Under this power some of the fila- are apparently thicker than the majority and are club-shaped.

woven threads and club-shaped bodies. Harz suggested that they should be called actinomyces (ray fungus) and hence the disease is termed Actinomycosis.

In man the organism was observed and described by Israel in 1877, but it appears that Ponfick, in 1879, was the first to recognise the true nature of the disease, and to establish its identity with the condition previously described by Bollinger as met with in cattle.

The most recent contribution to the literature of actinomycosis in jaws is by Dr. P. Moosbrugger, who has published in Brun's *Beiträge zur klinischen Chirurgie* a report on the disease as observed in the Tübingen *clinique.* He believes that in both animals and man infection takes place by inoculation of the organism on a broken surface. With most authors he holds that in animals the point of inoculation is either in the mouth, fauces, or pharynx, through abrasions due to hard food. Animals may also be infected through abrasions of the skin of the neck, produced by rubbing the part against the manger or crib. Barley seems to be suspected by several observers to be the food which contains the organism.

Moosbrugger regards it as improbable that the human subject is inoculated either directly from the beast or indirectly through using its flesh for food. He thinks it not improbable that man, like the animal, is infected through the use of grain as food, or through inhalation of the spores of the organism; perhaps, also, occasionally by chewing straws or grain infested with the latter.

Inoculation may take place through carious teeth or damaged alveoli, and thus reach the periosteum or soft parts of the jaw. It may also occur on altered mucous membrane, on a wounded cutaneous surface, or a spot breaking down from disease.

The first effect of the presence of the organism in human tissues is the formation of abundant granulation-tissue, so soft in many cases as actually to fluctuate, but without any production of true pus. If pus is eventually present it is due to the admixture of ordinary micrococci with the special actinomyces.

Of the 75 cases recorded, 29 were inoculated in the neighbourhood of the lower jaw, floor of the mouth and throat, 9 in the upper jaw and cheek, 2 in the œsophagus, 1 in the tongue, 11 in the intestine, 14 in the air-passages and lung, 7 unknown; 55 were males, 21 females.

Actinomycosis of the upper jaw appears to offer a worse prognosis than that of the lower jaw. In the majority of cases the individuals affected belonged to callings which did not bring them into direct contact with diseased cattle.

The cases observed in the Tübingen *clinique* were 10 in number; to these is added 1 from Königsberg. Of these 11 the disease started in the lower jaw in 6; in the upper jaw in 1; in the cheek over the upper jaw in 2; in the lungs in 2. In 4 of the 6 cases in which the disease began in the lower jaw the onset was accompanied by severe toothache; the same was the case with 2 out of 3 of the upper-jaw cases. It started just as frequently around sound as carious teeth.

The first visible evidence of actinomycosis is always a hard, smooth, or elastic (often painless) tumour, apparently seated under the periosteum. This swelling spreads to the soft parts around, sooner or later, either by direct extension or through lymphatic channels, and forms nodular masses with white shreddy or granular foci. On incision into the swelling, serum containing little white granules escaped, but no pus in simple cases. In one simple case with sinuses the temperature was normal. In another, where sinuses had formed, there was high fever.

All the jaw cases recovered after operation except one (upper jaw), the two lung cases died.

The operative measures embraced incision and thorough scraping with sharp spoons.

When starting in the jaws the inoculation always appeared to take place around a molar tooth.

The characteristic actinomyces were demonstrated microscopically in every one of Moosbrugger's cases.

A NOTE ON ANKLE-CLONUS, WITH SPECIAL REFERENCE AS TO ITS PRODUCTION UNDER NITROUS OXIDE GAS.*

By Dudley Wilmot Buxton, M.D., B.S., M.R.C.P.,

Anæsthetist to University College Hospital, to the Hospital of Women, Soho Square, and Dental Hospital of London.

In the course of a prolonged investigation into the physiological action of nitrous oxide gas upon the organism, I have had forced upon my notice certain phenomena, apparently of nervous origin, and elicited by the gas in question.

The phenomena referred to in this paper are ankle-clonus or ankle-joint phenomenon, and the clonic and tonic convulsions attending nitrous oxide narcosis. Although my experimental work, to which I shall have occasion to revert later, was necessarily prosecuted upon the lower animals, my investigation concerning ankle-clonus was conducted upon human beings, mainly at the London Dental Hospital, Leicester Square, and with the able assistance of Mr. Wynne Rouw, late house-surgeon to that institution, and of Mr. Herbert Williams, the present house-surgeon. Indeed, it is almost, if not wholly, impossible to employ the lower animals for observing ankle-clonus, on account of the extreme and remarkable proneness they evince to this so-called reflex.

The persons observed were taken haphazard from the patients who presented themselves for tooth extraction under nitrous oxide gas; all were presumably healthy, and careful observations were made to eliminate cases of marked disease. It should be stated that the patients were seen in the morning; they were mostly able-bodied, and walked to and from the hospital. In many cases they were seen twice or thrice, thus affording ample opportunities for observing any peculiarities of gait or mien.

The nitrous oxide was administered mostly by the same method, and observations made by the same person.

Among the men examined 33.3 per cent. were found to evince clonus in varying degrees, described as "slight," "marked," and "very marked," The ages of the male patients varied from 13 to 50 years, but no influence seemed to be exerted by age, as clonus was elicited in a patient aged 15, and in others considerably over 40.

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* Read in the Section of Medicine at the Annual Meeting of the British Medical Association held at Dublin, August, 1887.

Among women, 29.2 showed ankle-clonus. Their ages varied from 14 to 50 years, the youngest girl in whom we elicited clonus being 17, and the oldest women 40 years of age. Both among men and women the "well-marked" cases appeared to be pretty evenly distributed throughout the range of the scale of age.

If we take individuals irrespectively of sex, we find ankle-clonus is elicited in 30.6 per cent. under nitrous oxide. This result, however, I am inclined to believe is really under the mark, as I have for various reasons excluded cases examined in University College Hospital and elsewhere, where a higher total percentage was reached.

The above results appear to be valuable in two ways; first, as they throw light upon the difficult problem of the pathogenesis of ankle-clonus; and, secondly, for the practical bearings they have with regard to the value of nitrous oxide gas as an anæsthetic in neuro-pathological patients.

In the first place we may, with advantage, review the current opinions of neurologists concerning ankle-clonus. Is ankle-clonus a condition which occurs in health; and, if so, did those patients examined by me evince simply in excess a normal phenomenon? Most, if not all, authorities admit that ankle-clonus, if present at all in health, is so only in a very few cases; and for my own part, although I have carefully sought for it among hospital patients, have never seen a case except in individuals afflicted with organic disease. Gowers goes as far as to regard ankle-clonus as evidence in every case of organic lesion, a view to which Guanck takes exception. It is said to occur in severe forms of functional disease, such as hysterical spastic paraplegia; and according to Drs. Hughlings Jackson and Beevor, it may occur after epileptic seizures, although soon passing off.

It would appear that ankle-clonus may be explained under several theories. Erb regards it as a simple reflex, a view opposed by the rapidity of the contractions, which are at least far more frequent than any other known consecutive reflex acts. The local nature of the phenomenon was, I believe, supported by Westphal, and in this country has received the great weight of Gowers's authority. This view seems to hypothecate a so-called "stretching stimulation" of the gastrocnemius elicited by the operator's hand, which in its turn, by contraction, calls forth a "stretching stimulation" of the front muscles of the leg (tibiales, etc). In like manner the contraction of the front muscles stretch the gastrocnemius, and so the stimulation goes on as long as sufficient stretching takes place. But it is requisite for the induction of this phenomenon, or in other words, in order that the muscle should be capable of answering to a stretching stimulus, that the state of its nervous arc should be materially aberrant from health.

A further view was enunciated in the *Brown Lectures* for 1885, by Mr. Victor Horsley. He says: "By ankle-clonus I mean that the 'motor' centres in the spinal cord supplying one or other of both of the groups of muscles moving the ankle-joint are in the act of rhythmically discharging, with the effect of moving the ankle in active tremor at the rate of eight contractions (in the same direction) per second. I believe that the spinal cord centres are excited into this action by the stimulus produced by the sudden stretching of the muscles, as in the usual method of forcing up the foot. Further, that continued stretching will, of course, continue to elicit the phenomenon." Dr. Hughes Bennett, in the course of his introductory address delivered before the Neurological Society,* draws attention to the development of ankle-clonus and other cloni in subjects who are affected with muscular hypertonicity. He explains this condition of hypertonicity much as follows. Physiologically, muscle in relation with the spinal cord is possessed of the property of contracting when subjected to sudden stretching (extensile stimulus). "The mechanical condition," he adds, "necessary for the production of the response following percussion (a means of eliciting stretching stimulus) is sufficient tension of the muscular fibre."

Tschirjew† has shown that good reason exists for affirmimg that even if physiological muscle possess no simple tonus, as was formerly held, it is endowed with a reflex tonus or a constant partial contraction due to the nervous action of the spinal cord, and Dr. Bennett accepting Tschirjew's view, regards the condition he designates hypertonicity of muscle as dependent upon some change in the nervous arc whereby discharges are elicited with minimum stretching stimulation. Of course such stimulation would be wholly inadequate to produce the nerve discharges in health. He discusses whether these changes in the nervous arc originate in the motor ganglion cells, in the afferent or efferent channels, or pyramidal tracts, and admits that probably all or any of the situations named may be so affected as to produce hypertonicity in muscle. Thus he says "Hypertonicity of muscle may result from: 1st, primary irritation of the cells themselves (strychnine); 2nd, irritability of the entire reflex arc in common with the whole nervous system (neurasthenia); 3rd, irritability of cells secondary to abnormal state of their afferent and efferent elements (injuries to sensory or motor nerves); 4th, direct irritation of cortex cerebri or pyramidal tract (tumour of brain); 5th, destruction of cortex or pyramidal tract." Thus we see that the condition of so-called hypertonicity will follow over-excitability of the motor cells in the cord, and these are thrown into this state of over-activity by idiopathic alterations in the cells themselves or by irritation conveyed either peripherally by afferent nerves, or centrally by brain conditions. This irritation further may, it is believed, arise from trophic lesions, organic disease, or functional disturbance.

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* Muscular Hypertonicity in Paralysis. By A. Hughes Bennett. 1887.

† Arch. f. Anat. u. Phys. 1878.

(*To be concluded.*)

CLEFT PALATE AND ITS TREATMENT.

By J. Harry Badcock.

(*Concluded from page* 858.)

This style of apparatus is well adapted for congenital cleft, or if it be a little modified, for acquired fissure or perforation of the soft palate.

The central pedicle should be made small, so that it does not touch the edges, and in the majority of cases it should be hinged to the plate that carries it at the point of junction of the normal hard and soft palates.

The third method is due to Wilhelm Suerson, of Berlin. His instrument is an obturator of hard rubber, the fore part fitting round the teeth and covering the hard palate, while the obturator proper is a pyramidal mass with its base towards the posterior wall of the pharynx and its apex at the apex of the cleft. The lower side is on a plane with the hard palate so far as it exists, and the upper, forming the floor of the nares, is grooved for the passage of secretion. The two sides are wide, and make the slightest possible contact with the edges of the cleft in deglutition, and in the utterance of certain sounds, thus, with the aid of the superior constrictor, perfectly shutting off all communication between the mouth and naso-pharyngeal cavity.

Suerson's instrument is durable, and not liable to be damaged or to get out of order, above all it produces a far more resonant voice than any soft material. This effect is considerably augmented if the lower surface be made of gold. These properties make it very useful for congenital clefts after articulation has been learned with a Kingsley velum.

In considering the relative merits of these methods and their application, we must bear in mind the conditions which are essential in the treatment of all cases of Cleft Palate, viz : (1) Restoration of continuity of surface in the palatine arch, and separation of the arch of the palate from the floor of the nose ; and (2) The possibility of cutting off communication between the oral and naso-pharyngial cavities at will, by contact between the free border of the palate and the posterior wall of the pharynx, irrespective of the means by which the velum palati is restored.

When these conditions can be satisfied by operation, that is undoubtedly by far the best method ; but, unfortunately, this is but rarely possible.

When the operation of staphyloraphy has been performed, it is by no means infrequent for the union to be incomplete, and require to be supplemented by artificial means. Even if perfect union has taken place the results may be far from satisfactory. The velum is often tense and so scanty that it is unable to perfectly cut off the communication between mouth and nose, causing a marked nasal intonation, and making purely nasal sounds impossible, even if it does not cause inconvenience in other ways.

Every case must be treated on its individual merits. If the cleft is congenital, the patient in good health and there is abundant material for a good palate, operation should be had recourse to ; but if any one of these conditions be wanting, mechanical treatment must be advised.

The improvement in articulation in all congenital cases is slow, though great perfection may be ultimately obtained, and must be made the subject of careful and systematic education. At first the patient should be taught to pronounce words distinctly, opening the mouth wide, and closing the nostrils with the fingers. Later on he should be encouraged to read aloud in the presence of some friend who will correct faults judiciously, without causing irritation or nervousness on the part of the reader. Singing for a certain time daily is also of very great service, as the thoughts are to some extent distracted, and the attention is not unduly concentrated on the elocutionary efforts, as is well seen in the case of stammerers.

When the lesion has been acquired this education is not necessary, unless the patient has been many years without an instrument, and immediate improvement usually occurs. The selection of the various forms of instruments has been sufficiently indicated above.

We must now turn to the consideration of those cases of cleft acquired after birth, either by accident or disease.

Accidental injuries of the palate are comparatively rare, and usually the result of gunshot wounds, or they are caused by persons falling while holding in the mouth some pointed instrument, such as a pipe, stick, spoon, etc.

Small wounds need no attention, and generally do well, Lacerated wounds dividing the velum should be brought together with sutures, or in cases in which treatment has been deferred and a separation has ensued, the edges may be pared and brought together, as in the operation for congenital fissure.

If the hard palate be perforated, a simple obturator should be worn bridging over the aperture which tends to close spontaneously in course of time.

Syphilis is by far the commonest cause of acquired cleft palate, though it may arise as the result of scrofula, or even of a sub-periosteal abscess, the result of a carious tooth.

The syphilitic ulcer is usually a tertiary or secondary symptom, though it may occur at any stage of the disease, whether congenital or acquired. It first appears, either in the mouth or nose, as a slightly yellowish spot covered with an ash-coloured membrane, beneath which slight ulceration may be found, and is often preceded by an erythematous redness.

These ulcers, as they increase, often take on a sloughing action, and spreading, destroy the surrounding soft parts, and, if situated on the hard palate, necrosis may result.

The extent of the injury may range from one or more perforations either in the hard or soft palate, or at the junction of the two, of variable size and shape, with irregular, unhealthy edges, to more or less complete destruction of all the bones of the face and their surrounding soft parts.

Constitutional treatment of the disease with mercury, potassium iodide, etc., must of course be the first consideration. The local treatment consists in removing all dead bone when loose, and the free use of astringent and disinfectant lotions.

It will be frequently beneficial to stimulate the edges with nitrate of silver, or nitric acid, while iodine, either pure or diluted with starch or nitrate of bismuth, sniffed into the nostrils, will considerably lessen the stench.

In scrofula the ulcerative action is sometimes so rapid as to destroy within a few days the whole fauces. It is chiefly met with in the young and feeble, and is often mistaken for syphilis, from which it can only be distinguished by the previous history. Tonics and local stimulants must be given, while fresh air and plenty of liquid food of a nutritious kind form the best constitutional treatment. If the patient be unable to gargle, carbolic acid lotion, sulphurous acid, or Condy's fluid may be used as a spray. Powerful caustics are often of advantage. In all acquired cases, operative interference for the restoration of lost parts is not to be recommended, as the patient's general condition is so depraved that primary union cannot be looked for.

After the parts have been brought to a healthy condition, a well-fitting instrument must be adjusted, great care being observed that it shall not press upon the soft parts at any point, and thus set up fresh ulceration, and that nothing be introduced to touch the margins of the cleft, as this would cause absorption and consequent enlargement. The necessity for great cleanliness, and the free use of antiseptics should be impressed on the patient.

As cleft palate is a deformity which causes the unfortunate sufferer the utmost discomfort and misery, and at the same time renders intercourse with his fellow-men painful, and sometimes well-nigh impossible, its study deserves the deepest attention, and the means for its alleviation the most careful thought and the most persevering observation.

DANGEROUS CASES OF EPISTAXIS AND ALVEOLAR HÆMORRHAGE, FOLLOWING EXTRACTION; AND A CASE OF PERSISTENT TRISMUS DENTIUM.

By F. Sleep, L.D.S.

May 6th, Mrs. H——, the wife of an hotel-keeper, æt. 50, having made up her mind to have a set of artificial teeth, visited me for the purpose of having her mouth prepared for their insertion.

The teeth to be extracted did not present the slightest difficulty, being a few in front of the superior maxilla, somewhat elongated through recession of the gum. The work being performed, the patient was about to give a final rinse to the mouth, when the nose suddenly burst out bleeding on the left side, and seemingly from the middle meatus. Cold wet napkins to forehead and holding the nose having no effect, I directed her to breathe through the mouth, and kept up a continual stream of cold water from a glass syringe, without, however, the least effect. I now got some tannic acid, and directed her to snuff it up heartily; still it continued. Finding the lady impressed with the belief that a door-key down the back would arrest it, I let her follow her inclination. Meanwhile, I prepared a bowl of as strong a solution of alum as time would permit me to make, and started pumping again. At last I was rewarded with a stoppage. A hansom was now sent for, and getting soap and napkin I attempted to wash the face. Soap, however, was quite useless as a solvent of the chemical compound, so I got a packet of washing powder, and managing to get off the worst, was just about to leave the patient when a second outbreak occurred. I again continued the pumping, but without avail; so, seeing that plugging was inevitable, I ground up some alum, and having mixed the powder intimately with several pieces of wadding, I placed the left-hand-forefinger up behind velum palati and packed the left nasal cavity.

Even then the blood continued to ooze in front, until I kept up pressure from the front towards the position of the bleeding vessel. A little blood now came from the right nostril, which I attributed to the blood creeping round from across the soft palate behind. The patient, however, being of a diverse opinion, I lightly packed the cavity from the front. With a little help she got into the conveyance, after 2½ hours had been spent in the way described. I desired her to put herself under the attention of her medical adviser, Mr. Pearse, forthwith, and to signify to him I would, if he desired, call and remove the pledgets. In the small hours of the morning the hæmorrhage recurred, and he came. He preferred to leave the plugs untouched, and to resort to other means of arresting it, which he succeeded in doing. The plugs were removed in due course, and the patient ordered not to leave her room. Some four days after, however, she entered the bar, and stooping to pick up something, had a repetition of the trouble. Nor did it end there, but recurred on two occasions at intervals of some weeks—once with such persistence that her life was almost despaired of. Such occurrences are possibly rare with dentists, yet may probably with justice come under the head of "accidents following extraction." That the hæmorrhage was caused through the extraction *per se* is most improbable, the cause being most likely the extra exertion and fatigue under sultry weather, combined with arterial excitement incidental to the operation. That such cases may be fraught with danger may be illustrated by the fact, that as I write this, the remains of a poor young girl who had served at the counter of one of the Dairy Company's shops of this town, are being consigned to their last resting-place through such a case, notwithstanding she was attended by an able and conscientious surgeon of at least 30 years' experience.

On May 18th, Mr. Velvin, a farmer of Ivybridge, called on me relative to the extraction of some troublesome carious teeth. From his narrative it seems that about two years ago he suffered from hæmorrhage after an extraction performed by the local surgeon, which curious to relate, broke out a week after the operation.

He now believed his health better and desired relief from the offenders. I hesitated to extract more than one at a visit, but yielding to the consideration that it was a busy time and the distance was too great to come repeatedly. I proceeded operating, leaving however an interval between the extractions that I might watch the effect. All seemed to go well, so I finished with an attempt on a lower bicuspid root; I met, however, with an unexpected fracture and a second attempt met with an unusual resistence. At last it yielded itself--a fine specimen of exostosis.

I anticipated a hæmorrhage now, if ever, yet it happened that no unusual bleeding followed, and the gentleman departed highly elated.

About three hours later I was fetched by the friend at whose house he was staying, with the news that hæmorrhage had just occurred, which was causing them some alarm. On my arrival, I found as I anticipated, the blood welling up from the bicuspid cavity. After clearing it well out, I inserted a plug with tannic acid, bringing it full over the gum and heaping some of the powder around the surface. The relief, if any, was very transitory, so after an hour's trial I determined to remove it and insert another of perchloride of iron , so having twisted some wadding into a rope-shape, and saturated it, it was packed with a curved elevator firmly and solidly, leaving a surplus at the top on which I kept a steady pressure with my fore-finger. A weeping still continued, but I was inclined to think it would soon subside. I ordered him to take 10 minims of ferric perchloride in water every $\frac{1}{4}$ of an hour, until the bleeding had completely stopped, to keep the finger steadily on the plug and to send for me if needed. I had just managed to get something to eat when I was summoned again. I found him worse than ever, the plug somewhat swollen and blood oozing around it freely. I tried tannic acid over the top and around the gum, but without the least effect until matters looking serious I sorrowfully determined at 10.30 to remove the plug again, notwithstanding misgivings as to secondary hæmorrhag, and start afresh. The new plug did not seem to put a new aspect on affairs. I then asked them if they could favour me with a little tin-foil, such as lines mustard cans. I was, I think fortunately supplied with quite a stock.

I now placed a quantity of tannin around and over the cavity and some distance back, and moulded a piece of the foil quite over and down in the sulci at the buccal and lingual borders. It clung skin tight and abated the bleeding considerably for the time, during which I put light tannin plugs into the other cavities which might be participating in the general effect. Slowly but surely, however, came the persistent fluid ; at first tannin around edges seemed to keep it in check, but as time dragged on I saw something better must be attempted. Midnight found me preparing a piece of foil having on its surface a thin coating of wool saturated with perchloride, then carefully stripping the foil before laid on, I replaced it with the last sheet. The acid seemed to take something of a " bite " on the mucous surface and an improvement was manifest. The quantity of blood lost was very great and the patient shewed great exhaustion.

The bleeding slowly stopped and he fell into a doze. The lady of the house expressed her determination to watch by him till daylight, so I thought I would venture to snatch a little repose, if possible. At about 3 o'clock, however, I was called to action again, I found the patient's mouth filled with coagulated blood and his system altogether in a sinking condition. I determined to repeat the last proceeding with the foil, but found some difficulty in getting it off. What however stuck fast I left, and superimposed another layer in same manner as before. Here, as before, there was a decided improvement. He was, however, languishing under the drain; and breaking out into a profuse sweat, I foresaw he was about to faint. On coming round as I anticipated, it stopped and at 5.30 he slept again and the bleeding did not recur. I removed the plugs and foil next evening, a moisture came over the cavity but I filled it with tannin at once. He was dieted on beef-tea, eggs, milk, etc., and found his bowels bound from the continued internal administration of the iron. He was too feeble to leave for a week. I am inclined to think medicated tin-foil a ready means of considerable service in such severe cases. I shall, however, never feel safe without the stronger preparation at hand, solution of perchloride of iron (fortior), as I imagine that the spirit of the weaker tincture gradually dissolves in the fluids of the mouth. I received a grateful letter from the gentleman about a month after to the effect that the bleeding had not recurred and that he had regained his strength again.

July 22nd, I received a message from Dr. Dutton, of Plymstock, desiring me to meet him with gas apparatus, etc. Our patient, a captain of a steam packet, had for nearly a week declined work on account of a violent toothache. Gradually, with the increasing periosteal irritation, came paralysis and stiffening of the muscles, and inability either to eat or sleep. In conjunction with the above trouble, he was suffering from hæmorrhoids, which was unfortunately concealed until aggravated by a dose or two of morphine.

What with the drain on the system, starvation, and want of rest, the patient was in a high state of nervous exaltation bordering on mania. An examination conducted as well as I could, showed the jaws firmly set, and that was all. I got behind him, however, and suddenly and unawares catching hold of the mental process of the lower jaw, exerted all my force, with the result of bringing the lower centrals down to the level of their superior antagonists. My next piece of business was to procure a piece of deal and whittle it to a wedge. With this I managed to get the mouth sufficiently open to pass my finger around the outside of the alveolus, and conclude that a buried second molar stump was the cause of the trouble, and that he had not erupted the wisdom teeth. The first molar, as occurs in such cases, towered over the front, and to make matters worse the molar above grew down into the space. The case looked so unpromising, I suggested chloroform. He, however, became so demonstrative and noisy that it was determined to proceed, so cutting a notch on the wedge, and tying a string to it, I filled an eight gallon bag with gas, and pulling out the lower valve, pressed my fore-finger on the expiratory nib above, thus compelling him to breathe to and fro from the bag; I deemed this necessary, lest in the struggle I should lose my gas and the chance of a thorough narcosis. Dr. Dutton grasped him whilst I forced him "off." I had a Thomson's elevator handy in my vest pocket, but intended trying what I could do first with a Harris' lower bicuspid forceps. After using it in the manner of a lever, I managed to get sufficient space to fix forceps and remove the stump, which was bathed in pus. On recovery, patient lay hysterically screaming on the floor. Learning that tobacco had a powerful effect on him, I hailed a smoking neighbour, whom I got to keep him puffing at a strong pipe. After amusing himself thus, he settled into a more sensible state. Although the extraction released a quantity of pus, the interval of a week produced little improvement as regards mobility of the jaw. Dr. Dutton therefore made an incision on the inside of the jaw, with the result of evacuating offensive greenish matter. Another week passed on, but although directed to continually exercise his jaw, space was not gained. He was therefore sent away for a week for change of air, with a screw gag, and directions to continually increase the distance of the blades as space was gained. On the 16th of August he was at his employment again. He complains of a pain about articulation and temporal region when he attempts to open widely.

THE USE OF COCAINE.

By A. W. Furber, L.D.S., Eng.

The usefulness of cocaine being now largely ventilated, I think it is the duty of every dental practitioner having had experience in its use, to lend his support, if he can, to prove what power it exerts in lessening human suffering.

I have for a long time had considerable experience in the use of hydrochlorate of cocaine, hypodermically injected, and with but few exceptions (and then only when the patient has been of a highly nervous temperament, or troublesome) have found it most gratifying and successful in its action, and on no occasion have symptoms arisen, causing me anxiety, or any discomfort to the patient. I therefore consider myself to have been more than fortunate and at the same time feel in a position to speak in praise of cocaine.

I have strictly adhered to the ten per cent. solution, injecting from ten to twenty minims.

Having been born in physic—if I may be allowed the expression—I am at all times desirous to prove to myself the actual results of new and important medicinal agents, especially those more closely identified with our profession, as dental surgeons.

As experiments I have inhaled chloroform, ether, bichloride of methylene also nitrous oxide gas, always without ill-effects and receiving at times useful practical lessons.

My last test upon myself was with cocaine, when about four months since, in the presence of my wife and some friends, I injected slowly, twenty minims of the solution of cocaine in close proximity to the thumb-nail of my left hand, the result being utter insensibility of the part extending to the first joint, the non-sensitiveness continued for about an hour or more, during which period I subjected my thumb to most severe treatment, but without experiencing the slightest pain or even feeling ; partial numbness existed for nearly two days, but unattended with any constitutional disturbance.

I am gradually losing my thumb-nail through the mechanical injury I perhaps stupidly inflicted.

My experience thus far is sufficiently inspiriting to make me believe that cocaine is a most valuable drug, and could I feel convinced, be used with advantage in minor and even major surgical operations, often preventing the infliction of unnecessary pain.

It is the practical chemist of course whom we have to thank for such valuable discoveries in anæsthetics, but it is the medical man and the dental surgeon we have to look to for instruction as to their power for good or evil, and this can only be given after having witnessed many operations and made voluminous notes of every phase of the administrations from begining to end.

Weapons like these, even of the least deadly form, are not to be played with, and I would strongly impress upon all who handle them, the stern necessity of having everything at their fingers end, in case a single feature might arise that for one moment would give concern.

No careful dental surgeon—were it practicable—would be without the aid and assistance of a medical man whose presence would relieve him of great responsibility, but, alas! this in some practices, for obvious reasons, is a positive impossibility, and as poor humanity at the North and East of this great city are as susceptible to pain as those at the South or West, great strain and anxiety must inevitably fall to the lot of many of our brethren who were not born in the plush, but who are still compelled to struggle on, doing good work and often for a very poor pittance.

In a scientific sense I fear my remarks have not contributed much, but if I have conveyed anything that may establish confidence in those seeking knowledge, I shall at least have achieved a little.

THE GLASGOW MEETING OF THE BRITISH DENTAL ASSOCIATION heralds various changes in the working staff of the Association. Sir John Tomes, F.R.S., no longer is President of the Representative Board, Mr. Smith Turner reigns in his stead; Mr. Parkinson, although still upon the Board, retires from his arduous duties as Treasurer, and hands his balance-sheet to Mr. Canton, the late Secretary. We are disappointed to find this interesting department and its report are dismissed in a few lines of the Association Journal, which tells the Treasurer's Report was moved and adopted. We are glad to hear it, but surely so important a document is worthy of widespread publicity. The new Secretary is, as all the dental world knows, Mr. Morton Smale. Between eighty and ninety members attended, and a moiety of these listened to papers and discussions, and witnessed the capital demonstrations. The 1888 meeting is to be in Dublin, the Association's Prodigal Son and Mr. Daniel Corbett is to be the President.

British Journal of Dental Science.

LONDON, OCTOBER 1st, 1887.

PROBABLY the feature which will lend the greatest interest to the doings of the British Dental Association during their Annual General Meeting just completed at Glasgow, will be the retirement of Sir John Tomes from the Presidency of the Representative Board of that Association. For many years now Sir John Tomes has been the central figure in all dental politics—his judgment, his ready tongue and active pen have been busy in directing the councils of the Association. It is, then, very pathetic to read the address which the out-going President delivered ere he resigned the reins of government into younger and less weary hands. It is pathetic to hear of failing health, of enforced absenteeism from meetings, and of the recognition that while the vistas of the past are long and crowded with fleeting figures, those of the future perceptibly shorten and open out into the present. The address, which we print in another column, tells us of those vistas of the past, as Sir John Tomes, like Goldsmith's Village Warrior "shouldered his crutch and showed how fields were won."

It must be remembered that in the retrospect with which we are dealing, the speaker is referring to history, not simply as one who has lived through it, but as a history maker, if we may be allowed the expression. Few of our younger men can in the least degree estimate the self-sacrifice, the toil, the anxiety which fell to the lot of men like Tomes, when they were striving to set Dentistry upon its footing as a profession, when, in the teeth of bitter and rather senseless opposition from the medical profession, these men forced their claims before the Colleges of Surgeons, and subsequently attacked the Houses of Parliament.

Sir John Tomes tells us that the developments of the present day are but the necessary results of the labours of the past. There was a time, he says, now almost forgotten, when true knowledge and sufficient skill in dental matters were to be found among very few of those who styled themselves dentists. Each surgery, it might have been added, held its traditional rules of practice, "tips," as they would be called now-a-days, which were closely and jealously guarded from all save the descendants of the house. In those days the rank and file of the profession were recruited from the lower grades of society—education or breeding in a dentist were almost as rare as knowledge of the Pandects was among fox-hunting squires. Now, whatever may be the condition of the rank and file of our profession of to-day, it stands in strong contrast to the state of things to which Sir John Tomes refers. We all deplore, and justly, that the whole profession has not united to stamp out from its midst the many derogative practices which charlatans and persons of notoriously dishonest character have dealt in and thus by their dodges and advertisements, or other mendacious means, have brought Dentistry into disrepute. But we have advanced thus much, we do now-a-days recognise that to expose hideous, grinning sets of artificial teeth, to ply the public with hand-bills, by which "Doctor" So-and-So draws attention to superfine work at ridiculously low prices, is unprofessional, ungentlemanly, and unworthy of a respectable dental practitioner. Even those among us who advertise to "protect ourselves," and hug this soft sophism, are bound to admit that what they do is disreputable, a step which we may hope will eventually lead them to the corollary that if it is necessary to protect themselves by advertising, it is still more needful to protect their reputation and honour as honest men by discontinuing this disgraceful practice. There are some, mostly youthful members of the profession, who would take the high hand, and attempt to pour forth the vials of the wrath of the law upon such offenders. To such hot-headed Don Quixotes the words of Sir

John Tomes should come home; he says: "The penal clauses are of inferior importance, for the educated always have it in their power to surpass the uneducated in the pursuit of any subject requiring the exercise of knowledge and skill." Deplorable as indeed are the shortcomings of our black sheep, it is wiser counsel to recommend that these gentry should be starved out by the competition of better educated and more skilled practitioners; if the man who has obtained a bare legal qualification, and has shirked attention to his practical work, expects to be protected against a rival who, although legally a pariah, yet possesses the golden key of skill and a ready wit, he is indeed leaning upon a bruised reed. He needs protection against himself. Of course we require the penal clauses to be sufficiently explicit to prevent unskilled charlatanism from ramping rough-shod in our midst, but we do not deem it advisable that the ferule of the law should be held perpetually before the profession, as though they were so many naughty school children. The principle of the "survival of the fittest" is as true in the dental political world it is among the denizens of the African jungle.

INTERNATIONAL MEDICAL CONGRESS, PRESIDENT'S ADDRESS.—Dr. Nathan Smith Davis opened the Congress by a speech in which he eulogised such gatherings as that at Washington. He contended that international meetings enabled men to take wider views of their professional studies, and enabled them to keep abreast of the times. Dr. Davis also commended in high terms "collective investigations." These, he considered, offered immense opportunities for working out the different problems which perplex those who practice the healing art. We cannot as yet form any reliable estimate of the value of the work of the dental section, we shall shortly, however, be in a position to notice Dr. Taft's address, and the other papers presented to the meeting.

MEDICAL AND DENTAL ASSISTANTS.—Writing to the *Archives of Dentistry*, Mr. Parsons Shaw, of Manchester, says:—"A case of the highest importance to medical men and dentists has just been decided in the Court of Queen's Bench on an appeal from the decision of the Judge of the County Court of Salford in an action brought by a legally 'qualified' man to recover for professional services wholly rendered by an assistant who was an 'unqualified' man—that is, did not possess a legal right to practice for himself, but was considered fit by this qualified (?) man to see his patients. The County Court Judge decided that such an account could not be collected, and the Upper Court sustained the decision. Thus is exposed and swept away one of the shams of the men who are so clamorous for penal clauses in Dental and Medical Acts of Parliament. Under the pretence of protecting the public against incompetent men, although they have not got all they want, they have managed to prevent any but a 'qualified' man collecting his accounts in a court of law. Having secured so much of a monopoly for themselves, in shameless contempt of all their pretentions and of the interests of those they profess to guard, they turn round and employ these very same 'unqualified' men as assistants at a small salary, and send them to their patients, who have the same fee to pay as if the employer went himself. The Court has now affirmed that if a man is declared by law not fit to practice by himself, the law must hold him unfit to practice in another man's name."

A NEW REGULATOR.—At the recent meeting of the Minnesota State Dental Society, Dr. E. H. Angle, of Minneapolis, presented a paper on, and the appliances describing, a new method for correcting irregularities of the teeth. Dr. Haskell, writing in *Items of Interest*, says:—"These appliances are exceedingly simple and effective. They are not altogether new; one of them, for instance, the jack-screw, is so different from its prototype it would scarcely be recognised as a jack-screw. There are several lengths, one of which is but *one-quarter inch* long, and yet can be used effectively. The appliances are few, small, and do away with rubber plates, bands, and ligatures; there is also an appliance for for holding the jaws apart, causing no irritation of the gums.

Another important feature is that a part of the appliance is always used for retaining the teeth in place in a simple manner. They can be made by any one.

Caution in the Use of Iodoform.—A curious effect of iodoform upon silver is reported by Dr. Poncet, who had his attention directed to it by a patient, to whom he had been applying iodoform dressings, telling him that all soups and other diet for which she used a silver spoon had a very disagreeable taste, and the spoon itself had a garlicky odour. Upon investigating the subject, Dr. Poncet found that silver that has been in contact with iodoform, or which is even touched by the fingers after they have been in contact with iodoform, acquires a nauseous odour, resembling that of garlic, which becomes more perceptible upon rubbing the silver. A drop of saliva from a patient fully under the influence of iodoform is said to be sufficient to impart this odour to silver, or the mere exposure of iodoform and silver in the neighbourhood of one another. The odour is not that of iodoform, but is thought to be due to a decomposition product.

Zonular Cataract and Dental Malformation.—Dr. J. B. Story (*Ophthalmic Review*) cites several cases in which cataract was associated with "rachitic" (not Hutchinson) teeth in children, who presented generally a history of infantile convulsions, cranial deformities and defects in intelligence, all of which abnormalities he traced to the action of rickets. The rachitic teeth are, as a rule, thicker and coarser than the normal; the nearly formed incisor appears somewhat cubical and shapeless, though the shape can, in many cases, closely approximate the normal. The enamel, instead of gradually thinning away on the neck of the tooth, terminates abruptly in a swollen ridge. The delicate horizontal furrows, to which the enamel owes its satin-like appearance, become so enlarged as to even be visible to the naked eye, and sometimes, especially toward the cutting hedge, a horizontal row of round hole marks the position of one of these excavated grooves. The body of the tooth terminates in a convex border at the cutting edge. The junction of the labil and lingul surfaces of the enamel runs as an irregular, zigzag line over the surface of the tooth. Sometimes the enamel is quite absent in grooves, the floor being formed by the discoloured dentine.

TEMPERING SWISS BROACHES.—Divide, says a contemporary, the number of broaches into halves, then place together with binding wire, drop melted beeswax over the bunch until the broaches are covered with the wax, then hold in a blaze until the wax ignites, remove from the blaze and allow the wax to burn off, let cool gradually. By this process the broaches are nicely tempered without corroding their surfaces, they are flexible, yet sufficiently stiff not to bend too easily.

LINING CAVITIES.—Dr. Herbst's method of lining cavities with gold for filling with amalgam is as follows : a large cylinder of Woolrab's gold is compressed between the fingers and dipped into a very thin solution of gum-copal in sulphuric ether, which is used for the purpose of preventing the mercury of the amalgam from uniting with the gold. When this compressed cylinder has been moistened with liquid, the surplus is pressed out with the fingers, the other allowed to evaporate, and then by means of a piece of cotton, the gold is pressed against the labial wall of the cavity in the tooth to be filled with amalgam. The gold in this manner can be thoroughly condensed by means of a rotating burnisher in the engine, and will not alter the shape of the cavity. When ordinary round undercuts have been made, the amalgam will be held in position without any trouble.

A NEURALGIA REMEDY.—An American Physician recommends the following :—Equal parts of the tincture of aconite root, colchicum seeds, belladonna, and actæa racemosa. Six drops to be taken every six hours until relief is felt. The Doctor says, that "as an internal remedy it is worth all others put together of which I have knowledge."

THE RELATION OF DENTITION TO AURAL TROUBLES, Dr. Sexton, writing upon this subject in the *Ohio State Journal of Dental Science*, says, are very important in infancy; before puberty, this process is most active, causing often great nervousness, especially in girls overworked in schools or shops. The catarrhal fever, to which this class of persons is subject, may simulate typhoid fever, for which it has been mistaken. Adolescents sometimes get their wisdom teeth with difficulty—indeed they are often not cut until the patient is 30 years or more of age. In consequence of the aural irritation excited through nervous sympathy in such cases, subacute and chronic catarrh of the middle ear, giving rise to extreme deafness, is of frequent occurrence; deafness may come on so gradually that the patient is unaware of its existence until its progress has been marked. Dentition is thus liable to be an important factor in catarrh of the head, and should never be avoided, especially in persons wanting in nervous tone. Overworked shop girls, living under faulty hygienic conditions, having dental irritation, sexual disturbances, and the like, are extremely susceptible to aural catarrh, giving rise to extreme deafness.

TOOTHACHE "SNUFF."—The following prescription is reputed useful:—

Bicarbonate of soda	℥ij.
Powdered starch	℥j.
Powdered hellebore	ʒj.
Cocaine hydrochlorate	gr. 1.

Mix.

HOW TO TEST FOR THE VITALITY OF A TOOTH'S PULP, always a difficult matter, may be in a simpler and more efficient method of applying heat than that usually employed for this purpose, was suggested at the April meeting of the Odontological Society of New York. It is as follows:—The preliminary isolation and drying of the suspected tooth and the immediately adjoining ones is the same as by the old method, although the rubber dam is not so essential. The tooth is then tested by applying to it a piece of gutta percha which has been heated over a flame. It takes hold and transmits its heat at once, and there is an almost immediate response if the pulp is living. If there is no response, it may, without being again heated, be applied to one of the adjoining teeth, with a known living pulp, and the comparison noted. The old method of testing with a heated steel instrument is terrifying to a nervous patient, and the response of the pulp be alive is often tardy in coming, or may be entirely absent. Apprehensive patients under the influence of fears or imaginings will frequently, when a heated instrument is applied, mislead the operator by declaring that a tooth is sensitive when you know it to be pulpless.

Iodoform Collodion.—The following formulæ have been proposed :—

		Parts
(1)	Iodoform	1
	Collodion	14
(2)	Iodoform	5
	Bas. peruvian	5
	Collodion	85
	Sapo mollis	5
(3)	Iodoform	10
	Æther	20
	Ol. ricini	20
	Collodion	100

Abstracts of British & Foreign Journals.

ARCHIVES OF DENTISTRY.

MOVABLE BRIDGE WORK.

By J. Hardman, Muscatine, Iowa.

In the ordinary stationary bridge, there are two serious objections :

1. A difficulty to keep the piece tidy or clean.
2. The graver one, that of great difficulty in repair and re-modelling.

In the movable bridge these objections are overcome, and all the desirable features of stationary bridge work fully retained.

The plan recommended is as follows :—

Attach all parts of the bridge by clamps and collars. These clamps or collars which are a part of the bridge, or superstructure, are to fit over the gold shell or crown and resting upon a pier-foot or projection made at the base of the crown-shell, supporting the piece securely under masticating pressure.

To secure the stability of the work where the teeth crowns used as piers are tapering, a retaining clamp-nipple should be placed on the crown-shell at a point near the end, and just over the place where the clamp rests ; so that in its adjustment the clamp will spring over it and be tightly retained in position. In a small piece one retaing nipple or key will be sufficient, but in larger cases two may be required on as many different teeth.

In preparing shell-crowns or any other form of pier that has a metal crown or collar, it is quite an easy matter to solder on the foot-projections near or at the base border, using small pieces of platinum for the purpose. Put in the retaining nipple by drilling a small hole where it is determined to have it placed ; put into this hole a small piece of platinum wire or plate, and fuse about it some gold, and dress and trim to shape ; also dress off the inside projection.

A bridge of this kind may also be made and comfortably worn where only nude teeth are used for piers. In such cases to guard against the bridge settling upon the gums a pin or two is inserted into the tooth near the neck, as a pier-support for the clamp to rest upon, and also a retaining pin can be placed in the same, just over where the end of the clamp rests.

The bridge must be removed after a meal to cleanse it.

A FRACTURED TOOTH.

W. P. C. gives an account of his case as follows :—

A lad of about 12 years of age, by a fall upon the ice sustained a fracture of the right superior central incisor. The line of fracture was almost exactly at a right angle with the axis of the tooth, fully one half of which was missing, and the pulp protruding from the full width of the exposed chamber.

The first step was to extirpate the pulp which was done by drilling a small hole diagonally in the exposed dentine to the point of barely exposing that organ, making a small application of arsenic and sealing. While this was taking effect the projecting pulp was covered loosely by rubber-dam, tied round the neck of the tooth, the reason for this mode of attacking the pulp being that the patient fainted on the least contact with the exposed part. The pulp was removed and canal filled with chloro-gutta-percha to about one-third its length. After dressing the fractured end, which required very little as the break was remarkably straight and clean, and running a groove with a wheel burr around the lower inside edge of the slightly enlarged pulp chamber ; a covering of cohesive gold was made at this point, leaving the chamber open in the centre, and this in turn was dressed to about the thickness of 28 gauge. Meanwhile, a porcelain tip had been carved, having a dove-tailed groove on its palatine surface, running in line with the axis of the tooth, and two platinum dowels to extend into the pulp chamber, with as much space between them as the walls of that cavity would allow, and about three-sixteenths of an inch long.

After fitting the porcelain tip to the cohesive gold surface on the end of the stump as accurately as possible, that portion of the canal not already stopped with gutta-percha was filled with phosphate cement, and the porcelain tip carried into position. When sufficiently set, enough of the cement was cut away in the pulp chamber and between the dowels to secure firm anchorage for a cohesive gold support or backing, which was continued down into the dove-tailed groove in the palatine surface of the tip.

On being finished the only gold in sight was the thin line across the face, and that in the dove-tail slot upon the opposite side.

ALUMINUM.

By Geo. H. Swift, D.D.S., Manchester, Vt.

Dr. Swift's experience in the use of aluminum for a few years past is very favourable, and he believes we may confidently assure our patients that it will, if pure, be fairly durable in the mouth, and will keep it healthy and comfortable. The early use of it was not altogether satisfactory, as traces of iron were often present to that extent that when subjected to the action of the fluids of the mouth, plates would sometimes be eaten full of holes, or be like a honeycomb. This, however, was more generally the case with case plates, which were not only more difficult to make, but were not as good. Aluminum is not very easy to cast, as it does not flow freely like most other metals, and the contraction when it cools is very considerable, thus cracking the teeth or blocks so badly as to render this method very uncertain. When made from rolled plate and pure material, aluminum for upper cases has proved very satisfactory, and not being very expensive is also a matter for consideration; especially for patients who cannot afford gold, but yet want something better than rubber. It is very light and strong, perfectly tasteless and odourless, and there seems to be no reason why it should not be as healthy for the mouth as gold or platina. The teeth are best attached with rubber.

Review.

A SYSTEM OF DENTAL SURGERY.*

(*Third Edition.*)

NOT before it was wanted did this book issue from the publishers' hands. Indeed, it would be speaking more to the point to say, that for several years before its appearance a very pressing want made itself increasingly and seriously felt for a work which should meet the needs both of the student preparing for examination, and of the practitioner whose endeavour it is to keep pace with the strides which every year sees in the scientific advancement of dental surgery. The second edition of this work published in 1873, though excellent in its day, had become of necessity, after fourteen years, out of date; and yet in no other direction could one find anything better, for other existing books on the same subject were either too elementary and incomplete, or too bulky and indiscriminate to be of any real value as text-books.

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* A System of Dental Surgery by Sir John Tomes, F.R.S. Third Edition, by Charles S. Tomes, M.A., F.R.S.; J. & A. Churchill, 1887.

How far, then, we must ask, does this new edition satisfy the wants of the day, and fulfil the requirements which such a book should meet?

It may be said at once, and without hesitation, that Mr. Tomes deserves the thanks of the profession for having found time and energy, in the face of the heavy demands of a busy practice, to turn out a piece of work which in so many respects is eminently helpful and satisfactory, and which has been done in no merely prefunctory manner.

Careful revision of many passages, and the addition of much new matter brings the book on the whole well up to date. Individual facts, and methods, and principles are clearly and concisely set forth, and a peculiar value which conspicuously characterised the two previous editions is to be found in this one also—the value, namely, which must always attach to a work consisting, as this does, so largely of personal experience and practice, as compared with the irresponsible utterances of those who write principally from hearsay. Not that Mr. Tomes by any means hesitates to state opinions and methods of practice other than his own, but such of these as he does offer to the reader form but a very small proportion of the whole work, and when they are introduced—always with due acknowledgment—it is with such wise discrimination and such careful judgment, that, as a rule, the value of the rest has been enhanced rather than lessened thereby.

With regard to new material, we should like to call attention to several important passages in particular. In the chapters dealing with caries there are many alterations and additions, including recent investigations and theories concerning its etiology; a very useful account of amalgams, their comparative value, and their behaviour under various circumstances, with a special reference to palladium (which ought to increase the use of that most valuable material); and a careful description of the Herbst method of gold filling. The pages on root-filling are admirable; the résumé of the present state of knowledge on the much-debated disease, pyorrhœa alveolaris, is good and impartial; and the careful consideration given to the subject of re-plantation, with the conclusion that "the operation is only to be regarded at present as a *dernier ressort*," is much to be commended. Again, the sections on neuralgia, and on secondary affections due to dental lesions, contain a wealth of recorded cases, the perusal of which, clearly and succinctly told as they are, will well repay the reader, and will stimulate many, it may be hoped, to exercise such care and discrimination in diagnosis and treatment as may enable them not seldom to be the means of relieving other and even more serious ills besides toothache and the loss of mastricatory power.

The book is wonderfully free from any controversial spirit, but some of its statements will not be equally palatable to all. To those who go to the extreme, as too many now-a-days do, of holding that cohesive work is the only form of gold filling worth anything at all, we would commend such sentences as the first three on p. 336, and those contained in the middle paragraph on p. 367, together with the warning words about retaining pits as "necessary evils," to be found on p. 388. The question of contour fillings is dispassionately discussed; and in the interest of long-suffering patients it is good to see the indiscriminate use of rubber dam clamps deprecated. We ourselves should join issue with the author on his dictum that in cohesive work "some form of mallet is always desirable," but space forbids our discussing the question here.

We regret indeed, that we have a more serious word to say about the books than could be contained in any difference of opinion with regard to alternative methods of practice. In such a book as we are considering, it is of extreme importance that it should be—not only entirely trustworthy and lucid in its individual statements, which the present volume with scarcely an exception, may be said to be,—but also, so clear and direct in its general arrangement as to enable the student without difficulty to apprehend the various aspects of any particular subject without great risk of confusing them,—and to make it easy for the busy dentist at once to put his finger on any point to which he may wish to refer. Now this clear arrangement and classification which we hold to be so essential to practical usefulness, is sadly wanting in Mr. Tomes' volume. To take one or two examples of what we mean, we have no hesitation in saying that the section on dental irregularities would be five times as useful as it is in its present form, if, with scarcely any alteration in the actual matter given, there were a more definite division of the subject under the heads of different forms of irregularity, and if under each of these heads again some uniform arrangement were adopted as to (1) appearances presented (symptoms, if the term may be used here), (2) causes, (3) modes of treatment, and (4) detailed cases. As it is we have but a very casual grouping of the different kinds of irregularity, and little or no uniformity of arrangement such as we have suggested. The consequence is, that though the section referred to makes very interesting reading, the reader and especially the student to whom all is new, and who needs all the help that well-defined and even somewhat arbitrary classification can give him, has at the end of his perusal an unhappy sense of confusion.

Very much the same may be said of the all important subject of caries. In the chapter devoted to the etiology of decay, and to the appearances presented by it, whilst there is a full résumé of the facts now known, and whilst great care is taken to do full justice to more or less conflicting theories, there is a want of sequence and order which is quite distracting to the average mind not gifted with the power of readily sifting and re-arranging facts for itself.

Again, it is much to be regretted that in treating of neuralgia the author shows such a want of that emphatic clearness so much needed to dispel the haziness and misapprehension existing on this subject in the minds of many amongst us. It is true, a definite statement is made to the effect that the term neuralgia is properly used to designate pain felt at a distance from the lesion causing it, and there is a sentence which rightly declares it to be "only a symptom, and not a disease *per se*." This is as it should be, but what is the unwary student to make of such statements when he reads, in close proximity to them the words, "in neuralgia pain is the prominent, often the only symptom," when he sees quoted a definition which begins by describing neuralgia as "a *disease* of the nervous system" [the italics are ours], and when the principle chapter on the subject is headed "Odontalgia or Neuralgia," as if these terms were interchangeable?

We have felt bound to notice what we consider to be the weak points in the book before us, but we have done so in no captious spirit; and in spite of the defects indicated, we cannot but estimate work very highly for reasons already given. There can be no question of the fact that it stands far ahead of any of its contemporaries. Without having made a careful study of it, no student can consider himself properly prepared for examination, and no practitioner who cares at all to keep abreast of modern discovery and practice, can afford to do without it.

Literary Notices and Selections.

CONTRIBUTIONS TO THE HISTORY OF DEVELOPMENT OF THE TEETH.

By Carl Heitzmann, M.D., and C. F. W. Bödecker, D.M.D., M.D.S.

I. History of the Development of the Enamel.

The fact has long since been established that the first step toward the formation of teeth in the human subject is the appearance of a furrow behind the lips, corresponding to the cartilaginous jaws, about the sixth week of intra-uterine life. At this time a trace of cancellous bone is usually formed around the cartilage. The epithelium covering the furrow is stratified. In vertical sections through the upper and lower jaws of an embryo of this age, we observe a depression surrounded on either side by an elevation, which is bounded toward the lips by a shallow ridge, and toward the tongue by a varying number of alternating depressions and shallow elevations—the floor of the oral cavity. The embryonal tissue corresponding to the furrow is characterised by an accumulation of medullary corpuscles, as well as by a cord-like formation, the corpuscles being in form mostly spindle-shaped.

At the end of the second month of intra-uterine life, the furrow is deepened, and lined with stratified epithelium, the deepest layer consisting of columnar epithelia which are plainly marked. The labial wall of the furrow may exhibit secondary elevations indicative of papillæ. From the bottom of the furrow, or one of its walls, a prolongation of epithelia takes place, which originally is composed of columnar epithelia, but later appears in the shape of a solid epithelial point or cord, whose borders are composed of columnar, and whose interior is filled with cuboidal epithelia. All these changes take place between the third and fourth month of intra-uterine life, and can be observed best in frontal sections of the jaws.

No accurate time can be fixed for these formations, since frontal sections of a three-month embryo exhibit different stages of epithelial prolongations, as well as epithelial cords which have reached a certain depth, and are broadened at their ends like a cup or bell jar (Tomes) surrounding a knob-like accumulation of medullary corpuscles, which is the first trace of the dentine papilla.

The epithelial peg or cord is either stretched out, or as it runs a more or less wavy course. Not infrequently knobs or buds grow out from it with a peculiar concentric arrangement of the epithelia. The epithelial cord, in some instances, may be short, almost immediately broadening after its origin from the surface, or it may be of varying, nay considerable length, taking an oblique, or devious course to such an extent that the cord runs parallel with the cup-shaped enlargement, and is inserted into the latter at an acute angle. It also occurs that the main epithelial cord runs almost parallel with the outer surface, giving off a branch interiorly for the formation of the temporary tooth, while the cord itself extends further, terminating bluntly at its distal end. Close below, the furrow, from the main epithelial cord a lateral cord sprouts out, likewise more or less knobbed, which, as is generally admitted, represents the first trace of a permanent tooth.

If we examine one of these cup-shaped enlargements, we observe a distinctly marked border composed of columnar epithelia, whereas the interior of the cup is filled with medullary corpuscles, which, in the centre, present the so-called stellate reticulum. At the end of the fourth and the beginning of the fifth month, we invariably find some epithelial cords, which, at their interior ends, are broadened, and contain a distinctly marked stellate reticulum.

The first question to be entered into is : whence comes the myxomatous tissue known as the stellate reticulum in the interior of the cup ? According to our present knowledge of the tissues of the mammalian organism, we are entitled to call the stellate reticulum a myxomatous tissue, which is a variety of connective tissue. This tissue occurs most extensively in the embryonal organism, and remains throughout life in the fully developed body only in a limited number of organs, such as the pulp of a tooth, the lymph ganglia, and the so-called adenoid tissue, which properly ought to be called lymph tissue, and is distributed throughout the mucous membranes, especially during the early periods of life. Unless we assume that the enamel organ is a tissue entirely different from all others entering into the structure of the body, we must call it myxomatous connective tissue.

Those who strictly adhere to the teachings of Thiersch and Waldeyer, will be loath to admit that epithelium can ever change into connective tissue. Previous researches, however, have led us to the conviction that such a transformatoin is by no means impossible. The thyroid gland, for instance, is originally composed of alveoli lined by epithelia. Shortly after birth the epithelium, however, is replaced by a medullary or lymph tissue. The whole central nervous system (the brain and spinal cord) originates from the embryonal epiblast, which is strictly epithelial in nature. Nevertheless, nobody will maintain that the central nervous system, so richly supplied with blood-vessls, is an epithelial structure, except in the lining of the ventricles of the brain, and the central canal of the spinal cord. There may be advocates of the exclusive nature of epithelial tissue, who might think of an immigration of medullary corpuscles between the epithelia of the enamel organ for the benefit of the formation of the enamel organ for the benefit of the formation of the stellate reticulum, but there is not the least indication of such a process in any of our specimens. On the contrary, we can prove a gradual transformation of the epithelia into myxomatous tissue.

In the third month of intra-uterine life, we observe, inside of the epithelial cup of the enamel organ, a zone entirely occupied by medullary corpuscles, and even in the fourth and fifth month such a gradual transition is distinctly traceable.

Those who still adhere to the cell doctrine will never be able to understand how medullary tissue arises from epithelia. According to our views, however, there exist no individual cells, but layers of protoplasm, in which the living matter is distributed in a reticular arrangement. Every particle of the living matter is able to grow from the size of a minute granule to that of a solid lump, in which a differentiation afterwards takes place into a peripheral protoplasm containing comparatively little living matter, and a central body, termed a nucleus, with a larger amount of living matter.

The inner epithelia, at the period mentioned above, exhibit augmented nuclei and small glistening granules near the fold, corresponding in position to the neck of the future tooth. The more we turn to the centre of the cup, the more will we be struck by the presence of glistening homogeneous lumps in the epithelia, until we have reached the centre of the cup, where we observe that epithelium has been transformed into a number of such lumps in a regular arrangement, which reminds us of their origin from previous epithelia. The original epithelia gradually become enlarged, and at last are split up into a number of medullary corpuscles. As a rule, this process of transformation is most marked in the original epithelia at the portion directed toward the stellate reticulum, whereas, in that portion nearest the papilla, the epithelial character may still be preserved.

The medullary corpuscles first assume a spindle shape, constituting the intermediate layer (*stratum intermedium*). The innermost spindles are in connection with a comparatively coarse network, representing the first trace of the stellate reticulum. The trabeculæ of this reticulum are composed of solid or vacuoled spindles, enclosing spaces which appear to be filled with a distinctly reticulated protoplasm, holding central nuclei. The latter exhibit a varying number of coarser granules, the so-called nucleoli.

Not infrequently the intermediate layer is missing, which affords the best opportunity for observing the gradual transition of the homogeneous globules arising from the epithelia into nucleated protoplasmic bodies, and at last into the myxomatous reticulum. Changes similar to those described take place in the central portions of the external epithelia, and, as it seems, even preceding those of the inner. Thus the original columnar bodies of the outer epithelium are reduced to a row of cuboidal epithelia. The medullary corpuscles are are slightly enlarged, their nuclei, at first plainly visible, are likewise split up into a delicate reticulum, and both become infiltrated with a myxomatous basis-substance. The peripheral portions of the original medullary corpuscles, on the contrary, are solidified into nucleated formations of living matter, representing the stellate reticulum proper. The meshes of the myxomatous tissue in the stellate reticulum are originally small, and correspond in size to the medullary corpuscles, from which they arose. The corpuscles of the stellate reticulum are mostly solid. Later, several medullary corpuscles are required for the formation of a large field of basis-substance. The original stellate reticulum, in this view, must fall back to an embryonal or medullary tissue before changing into a more perfect myxomatous tissue, such as we observe from the end of the fifth month of fœtal life up to the full development of the enamel.

Toward the end of the fourth, and the beginning of the fifth month, the stellate reticulum is composed of nucleated protoplasmic bodies, with a varying number of branching and inter-connecting offshoots. With low powers of the microscope, the basis-substance in the meshes, enclosed by the corpuscles and their offshoots, appears to be homogenous and structureless. The highest powers, howover, reveal in this basis-substance the presence of a delicate reticular structure, even without the addition of any reagent. This structure has arisen by a direct transformation of the original medullary corpuscles into basis-substance. In the highest development of the stellate reticulum, such as seen in the seventh and eighth month of fœtal life, the nucleated corpuscles are more slender, and the reticulum is composed mainly of delicate branching and inter-connecting fibres.

The further changes of the external epithelium are of considerable interest. While about the fourth month of intrauterine life the inner portions of the external epithelium are, as mentioned above, transformed into medullary tissue and participate in the formation of the myxomatous enamel organ, a single row of cuboidal epithelia is left. From the remains of this external epithelium, a new growth takes place of a markedly centrifugal character. By a multiplication of the epithelial elements, solid buds and knobs are formed, well known to previous observers.

These buds are at first in continutiy with the external epithelium, and have a distinct layer of columnar and a varying number of inner layers of cuboidal epithelia. They are characterised by a brownish colour, common to all epithelial formations. We observe that, both in the central portions of these buds and along the original row of the external epithelium, a transformation takes place into medullary corpuscles, the same as we observe toward the myxomatous enamel organ. This medullary tissue develops into connective tissue of a decidedly fibrous character. Thus we observe numerous interruptions in the external epithelium, partly filled with medullary and partly with fibrous connective tissue. The latter is in direct connection with the myxomatous reticulum, or this connection is established by spindle-shaped corpuscles, resembling those of the intermediate layer close above the internal epithelium.

At the time when the buds sprout from the external epithelium, an active new formation of blood-vessels and blood corpuscles takes place in the immediate vicinity of the buds. At first, we notice large protoplasmic bodies with coarse granules, which were known to Theodore Schwann, in

1839, by the name of blood-cells. With the increase of the size of these bodies the granules likewise become coarser and assume the properties of the so-called hæmatoblasts. These grow up to the size of red blood corpuscles, and we not infrequently encounter in the bays between the buds, groups of hæmatoblasts, or fully developed blood corpuscles, apparently isolated and in no connection with blood-vessels. At last, capillary bloood-vessels arise from the conference of blood-cells, which are filled with red blood corpuscles. The splitting of the external epithelium into isolated buds and nests of an epithelial character, is especially marked near the neck of the future tooth. At this place the amount of myxomatous enamel organ in a seven-month fœtus, is usually small, since a great quantity of it has already been transformed into enamel tissue. But even here, a few small and isolated epithelial nests are seen, surrounded by a large number of capillary blood-vessels, filled with blood corpuscles. It is obvious that all these blood-vessels are newly formed, and indeed we can trace the formation of blood-vessels in this situation, step by step. Even the myxomatous trabeculæ of the enamel organ will participate in the formation of capillary blood-vessels. We have seen closed spaces, or vesicles, sprung from the basis-substance of the myxomatous tissue, filled with hæmatoblasts and red blood corpuscles, partly in connection with already formed or forming capillaries. No doubt the living matter enclosed in the basis-substance has grown into hæmotoblasts. This process is indicated by the appearance of either coarsely granular or compact glistening nuclei in the meshes of myxomatous reticulum.

Wherever we observe epithelial nests, they are invariably enlarged toward the enamel organ by spindles and fibres of an intermediate layer. Their scarcity and diminutiveness at the place corresponding to the neck of the tooth, indicates that they are completely transformed into medullary tissue. Considering the fact that at the end of the intra-uterine development the enamel organ is nearly exhausted, and the enamel which is formed up to that time is comparatively thin, there is good reason for the assumption that the medullary tissue sprung from the previous external epithelium is the source for the completion of the enamel, such as we observe upon temporary teeth when they emerge from their socket.—*The Independent Practitioner.*

(*To be continued.*)

Reports of Societies.

BRIGHTON DENTAL SOCIETY.

The Secretary's Report runs as follows :—

MR. PRESIDENT, GENTLEMEN,—

It is with great pleasure I present this, the first report of our local Dental Society, a pleasure and honour, as I believe Brighton is the first town in England to have a local Dental Society.

We commenced our work in November last with eight members, and during the session seven gentlemen's names have been added to our list.

Our meetings have been well attended, and much pleasure and profit has been derived from them under the able chairmanship of our much respected President, O. A. Fox, Esq. The meetings have been six in number, the first of which was held at 14, Pavilion Parade, when our President read a paper on "Progression of Dental Surgery." Meetings have also been held at 21, Old Steine; 53, Norfolk Square; and 65, St. John's Terrace, West Brighton.

During the Session the following gentlemen have read papers :—

O. A. Fox, "Progression of Dental Surgery."

Dr. C. Stoner, "Dental Hospitals, and What Busy Men may do There."

J. Wood, "Regulation Cases."

J. Johnson, "Dental Materia Medica."

E. L. Norris, "Saliva and Salivary Calcalus."

During the Session the following objects have been brought before the Society :—Regulation Cases; Continuous Gum Work; Forceps, Nerve Extractors; Fillings on Herbst Principle; Fillings Gold and Tin; Abnormal Teeth; Model of Various Cases of Interest.

Before bringing this report to a close, the Hon. Sec. desires to draw the attention of the Society to the flourishing financial condition, as seen by our Treasurer's report; also to tender his best thanks to the members for their ready response in supplying papers, &c., during his term of office.

The following gentlemen were then elected for Session 1887-8 :—

President—J. Wood, Esq.
Vice-President—O. A. Fox, Esq.
Curator—C. B. Stoner, Esq.
Treasurer—S. Johnson, Esq.
Secretary—Douglas E. Caush, 63, Grand Parade, Brighton.

Correspondence.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,—

I have often thought that I should like to call your attention to a matter that materially affects all in our profession, materially affects because it degrades us as a body of men, "I refer to advertising." At the same time I can assure you that I have blushed at my own advertisements, because I have been *compelled* to protect myself by competing with men without principle, and of inferior skill, who seek practices (or more properly customers) by *quackery* and lies. A number of your readers will say, "Then why do not you leave off advertising?" and my answer is, that if I were to do so, I should lose £500 a year. My motive in writing to you is this, cannot something be done *to prevent all* in the profession advertising? Being able to advertise keeps many of us from taking the L.D.S. and other degrees. If advertising were to generally cease, scores of those now advertising would gladly take their degree, and assist in raising the profession in the eyes of the public, and not, as now, lower the profession in every sense of the term. Trusting that some one will take this matter up, and bring the whole matter before the proper authorities, and asking you to allow me to sign myself for the present,

Yours truly,

"MOLAR."

HOSPITAL REPORTS.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from 1st August to 31st August, 1887 :—

Number of Patients attended		2162
Extractions	Children under 14	491
	Adults	1065
	Under Nitrous Oxide	646
Gold Stoppings		65
Other Stoppings		261
Advice		151
Irregularities of the Teeth		43
Miscellaneous and Dressings		239
Total		2961

Herbert Williams, L.D.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of August, 1887 :—

Number of Patients attended		844
Extractions	Children under 14	628
	Adults	
	Under Nitrous Oxide	59
Gold Stoppings		33
Other Stoppings		65
Miscellaneous		243
Total		1028

Henry J. Moore, *House Surgeon.*

Monthly Statement of operations performed at the Dental Hospital, Birmingham, from August 1st to August 31st :—

Number of Patients attended	1240
Extractions	1180
Under Anæsthetics	40
Gold Stoppings	2
Other Stoppings	52

Advice and Scaling	79
Irregularities of the Teeth	4
Miscellaneous	179
Total	1554

W. T. Madin,

House Suryeon.

ANSWERS TO CORRESPONDENTS.

Neuralgia.—We sympathise, but fear your letter is not likely to resud in benefit to you, but may lead to proceedings for libel. We recommeny you to place the matter in the hands of a respectable solicitor, who probablt will be able to recover your money.

Mr. Fisher.—The journal will not "lend itself" to anything of that kind. Some misapprehension occured in the matter, which has been set right. Thank you for your letter.

TO CORRESPONDENTS.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., before the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer, which are not to be published when not desired.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, 289 & 291, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) . . 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 474. LONDON, OCT. 15, 1887. Vol. XXX.

LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Professor of Surgery and Pathology.

LECTURE III.—Diseases of the Temporo-Maxillary Articulation and Closure of the Jaws.

The temporo-maxillary articulation is, like other joints, the subject of inflammation due to constitutional and local causes, to which latter its exposed position would seem to render it particularly liable. Yet it is remarkable that acute disease of the temporo-maxillary joint is hardly recorded, and I think the explanation is to be found in the fact that it is often confounded with acute affections of the ear, and that mischief beginning in the articulation may induce purulent discharge from the meatus in children. No doubt in cases of suppuration of the middle ear the temporo-maxillary articulation may become involved through the floor of the meatus, in which a hiatus often exists in children; but, on the other hand, I have seen cases in which, from disease of the temporo-maxillary joint, perforation had ensued, and the condyle had found its way into the meatus. That destructive disease of this articulation is not very infrequent is evident from the number of museum specimens extant of complete ankylosis, and of the numerous cases of fibrous ankylosis which have been met with in practice.

In his *Practical Observations in Surgery* (1816), Mr. John Howship describes a case of "scrofulous inflammation of the face followed by ankylosis of the jaw" in a man, aged 56, who dated the origin of the disease from a cold taken at the age of 4. The original illustration shows complete bony ankylosis of the lower jaw to the temporal bone on the left side. On the right side the shape of the joint is considerably modified, as may be seen in the specimen in the College of Surgeons' Museum (1949).

In the Museum of University College is another specimen (849), showing an earlier stage of the same condition. The condyle is immovably united to the corresponding part of the temporal bone, the contiguous surfaces being very irregular but mutually adapted, and separated in part by a thin line of shrunken fibrous tissue. Considerable portions of each of the surfaces have been destroyed, the condyloid part of the jaw is much enlarged io the antero-posterior direction, so as to lie in contact both with the glenoid fossa and the articular eminence in front of it. Also in St. Bartholomew's Hospital Museum is a specimen (I. 664), of which I have been allowed to take a drawing (Fig. 44), showing the results of disease of the right articulation for the lower jaw, a quantity of rough new bone having been formed, from which the condyle appears to have forcibly broken away.

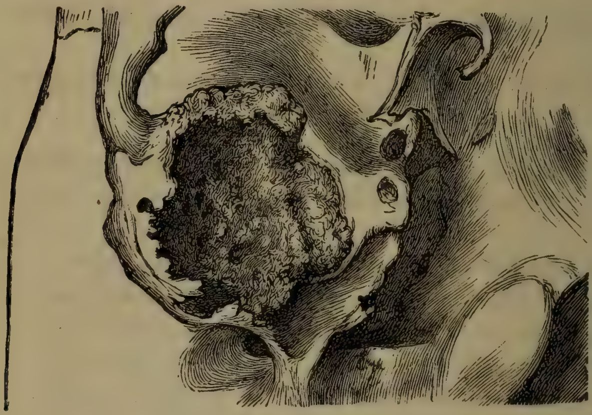

Fig. 44.

Cases of fibrous ankylosis of the temporo-maxillary articulation, recognised and treated as such during life, have been recorded by several surgeons, but I would especially refer to two published by Mr. Spanton, of Hanley (*Lancet*, April 16th, 1881), because that gentleman proved the correctness of his diagnosis by dividing the fibrous bands with a tenotome passed into the articulation, and then succeeded in screwing open the mouth. The patients were girls, aged 10 and 9 respectively, and in both cases the disease of the temporo-maxillary joint had followed scarlet fever.

The only disease of the temporo-maxillary joint hitherto generally recognised by surgical authors, has been the so-called "sub-luxation" of Sir Astley Cooper. It is an affection occurring principally in delicate women, and has been thought to depend upon relaxation of the ligaments of the joint permitting a too free movement of the bone, possibly a slipping of the inter-articular cartilage. From a considerable acquaintance with this affection, I believe that it is, in many cases at least, unconnected with any slipping of the cartilage, but is due to rheumatic or gouty changes in the articulation. The fact that these patients suffer most in damp weather and when the general health is feeble shows that it depends upon arthritic diathesis, and the relief that is obtained from counter-irritation and the exhibition of anti-rheumatic or anti-gouty remedies, proves that the complaint cannot be always due to purely mechanical causes. Professor Annandale, of Edinburgh, however, believes that, as in the case of the semilunar cartilages of the knee, the inter-articular cartilage of the temporo-maxillary joint may become displaced either by a sudden tearing of its connections or by a gradual stretching of them. In order to remedy the displacement, Mr. Annandale has devised and practised the following operation. An incision, slightly curved, about three-quarters of an inch in length, is made over the posterior margin of the external lateral ligament of the temporo-maxillary joint, and is carried down to its capsule. Any small bleeding vessels having been secured the capsule is divided, and the inter-articular cartilage is seized, drawn into position, and secured to the periosteum and other tissues at the outer margin of the articulation by a catgut suture.

The researches of the late Dr. Robert Adams and Dr. R. W Smith, of Dublin, have shown that rheumatoid arthritis occasionally affects the temporo-maxillary articulation, and the former author has in his *Atlas*, figured the remarkable hypertrophy of the neck of the condyle of the jaw, occurring in the case of a woman aged 30, to which I shall have occasion to refer more particularly later on.

Cruveilhier, who first described an example of rheumatoid arthritis of the temporo-maxillary articulation (*Anatomie Pathologique*, liv. ix), says: "I have never seen the disease I call wearing away of the articular cartilages better marked than it was in this case. The condyle of the lower jaw did not exist; it might be supposed to have been sawn off horizontally at the line of junction of the head with the neck, and that which remained of the neck had been flattened. The articular part of the glenoid cavity was represented merely by a plane surface; no trace of inter-articular cartilage or cartilage of incrustation existed. Both surfaces of the altered articulation were remarkably red."

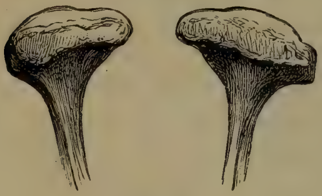

Fig. 45.

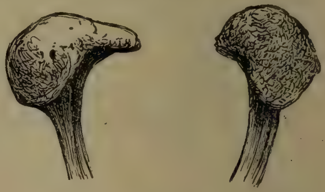

Fig. 46.

I have never had the opportunity of examining a recent example of this disease, but as far as can be judged from museum specimens, the articular surface of the condyles is flattened and somewhat altered in direction in the less marked instances (Fig. 45), and absorption of the neck, with complete wearing away of the articular surfaces (Fig. 46), occurs in the older and more advanced cases. I agree with Dr. Adams, that eburnation of the articular surfaces, or the occurrence of porcellaneous deposit in the temporo-maxillary articulation, is very rare. The description quoted from the St. Bartholomew's Catalogue by Dr. Adams, refers to preparation No. 551

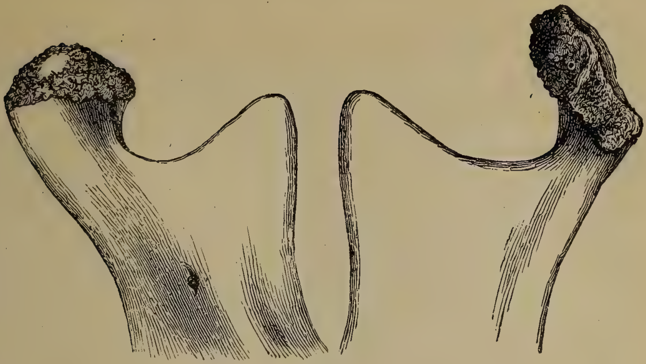

Fig. 47.

in that museum (Fig. 47) and is as follows :

"There has been disease in one of the articulations of the jaw, producing absorption of the the articular cartilage, with a deposit of bone around the circumference of the glenoid cavity. The corresponding condyle is in part removed by absorption; its surface is rough, except at one point, where it is highly polished and has an ivory-like texture."

Enlargement of the glenoid cavity is common in these cases, and is well seen in Fig. 48, taken from the same specimen in St. Bartholomew's Hospital. Absorption of bone must of course occur in these cases, but it is worthy of remark that, as pointed out by Dr. Adams, the bone forming the fundus of

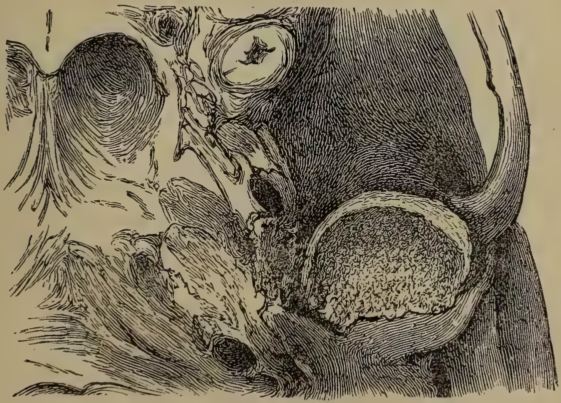

Fig. 48.

the cavity is not thinned, but, if anything, is thicker than in the normal state. The entire disappearance of the inter-articular fibro-cartilage is, apparently, an early event in chronic disease of the temporo-maxillary articulation. It had entirely disappeared in all the few recorded *post-mortem* examinations, and was absent in a case of hypertrophy of the condyle in the living subject which I successfully operated upon.

Mr. Arbuthnot Lane, who has published some original views on the mechanical causation and pathology of rheumatoid arthritis (*Pathological Society's Transactions*, 1886), describes as follows the changes which ensue in the temporo-maxillary articulation in feeble old age after the teeth have fallen out: "These changes are frequently very marked. The fibro-cartilage is very often completely removed, the only relic of it to be found being a fimbriated margin attached to the inner aspect of the loose capsule. In other cases the cartilage is rendered thin throughout its extent, and in others, again, it is perforated internally and posteriorly. The appearance presented by the articular surface of the head of the jaw, varies considerably. In some cases the head, while not diminished in breath, loses its convexity, and is instead flattened on its upper surface, the flat facet being quadrilateral in form. It may present a partial covering of cartilage, but in very many cases the bone presents instead a porous granular aspect. In such cases the eminentia is usually quite removed, the original elevation being replaced by a flat surface, which is continuous with that forming the back part of the glenoid cavity. This surface is usually completely deprived of its articular cartilage. Sometimes the head of the jaw is much constricted transversely, and presents a slight rounded convexity, which articulates with the inner part only of the glenoid cavity, having cut for itself a longitudinal channel through the inner portion of the eminentia articularis, the outer portion of this convex surface of bone presenting but slight changes." These alterations in shape of the condyle of the jaws are well seen in the specimens before you, for which I was indebted to the late Mr. Edwin Canton, and which I propose to place in the College Museum. Fig 45 & 46.

These changes, in Mr. Lane's opinion, are due to the loss of teeth, and to the consequent modification in the normal movements of the temporo-maxillary articulation, and the general atrophy of the muscles of mastication, especially of those that serve to approximate the jaws, namely, the masseter and internal pterygoid. It is owing to the action of these two muscles that the form of the angle of the jaw varies at different periods of life. As these muscles are used with great vigour during young adult life, the surfaces of bone into which they are inserted become strong and dense, and marked by vertical ridges indicating the attachment of the tendinous insertions of the muscles, especially of the masseter, and it is owing to the action of the latter muscle that the margin of the ramus is everted. As these muscles atrophy and become almost, if not completely, functionless, the portions of the bone into which they are inserted lose their prominent ridges, and their everted margin, and become rounded and wasted in a similar manner to that in which that portion of the great tuberosity of the humerus which receives the insertion of the supraspinatus atrophies in feeble old age. It is this atrophy of the angle which causes the appearance of the jaw peculiar to edentulous old age. The atrophy of the fibro-cartilage is due partly to an atrophy common to it and the muscle inserted into it, and partly to the loss of the movements of flexion of the temporo-maxillary articulation, and to their replacement by a simple antero-posterior movement of the opposing surfaces of bone upon one another. After the fibro-cartilage is removed, the articular cartilage is also destroyed, the surfaces of bone being brought into direct contact. By their mutual friction they destroy one another, and the amount of destruction will depend on the amount and character of the movement to which the bones are exposed, and the vitality of the osseous and nervous systems.

When this normal senile degeneration in the temporo-maxillary articulation is well marked, and occurs in an ataxic patient, the condition is described as Charcot's disease. This joint, more than any other in the old subject, undergoes great modification in its form and character.

Hypertrophy of the Neck and Condyle was observed by Dr. Adams in the case of rheumatoid arthritis of the temporo-maxillary joint already referred to, and is beautifully shown in Plate 2 of his admirable *Atlas*. Though occurring in a woman of only 30, there can, I think, be no doubt, from the description and drawings of her hands and feet, that the patient was the subject of rheumatoid arthritis. It is by no means certain, however, that the hypertrophy of the neck and condyle must be considered to be the results of that disease, for, as I shall show, this same rare deformity has been found in patients otherwise healthy.

Dr. Adams's patient, M.K., aged 30, was admitted into the Richmond Hospital in the year 1835. She was altogether disabled from earning a livelihood, in consequence of her having been afflicted with chronic rheumatic disease in most of her joints. Her face was quite awry, her chin slightly advanced, and its central point passed one inch across the middle line towards the left side. The fingers of both her hands from the metacarpal joints were in the same manner adduced towards the ulnar side and strongly flexed, and the first phalanx of the little finger of the right hand was dislocated towards the palmar surface of the last metacarpal bone. She complained of pains in all her joints, but principally in her wrists, hands, and feet; but it was remarked that the toes of both her feet were distorted, and some of them elevated above the level of the rest. When interrogated particularly as to her lower jaw, she said she had a constant aching in it and in the right side of the face. She also made the usual complaint of the changes in the weather causing an aggravation of her sufferings. She seemed uniformly querulous, and had a sad expression of countenance, indicative of suffering. Speaking and eating caused her to feel some pain in her ear and in the articulation of her jaw. To open her mouth completely she felt was impossible; and she stated that whenever she moved the lower jaw she was conscious of hearing some peculiar noise in her right ear, corresponding with each motion of the joint. The previous history of her case collected from her was that she had always resided in a damp cabin in the county of Wicklow with her parents, who were very poor; that she never had anything the matter with either her jaw or her hands, nor did she remember that she ever had been ill until about five years before period of her admission into hospital, when she had been attacked with rheumatic fever, which lasted some weeks, but from the effects of which she never recovered. In short, from her own account it would appear that the acute attack passed at once into the chronic disease now described. Her sufferings becoming daily more extended and severe, she at length came to Dublin for advice, and was for some months in hospital under treatment, which, however, as might have been anticipated in such a case of confirmed disease, was of but little use; and, being destitute and unable to support herself, she was transferred to the neighbouring North Union Workhouse. When she had been for about three years an inmate of this institution (during which her disease underwent no improvement), she became suddenly affected, on July 28th, 1840, with acute œdema of the larynx, which at that time seemed to prevail epidemically. This attack, after a few hours' illness, proved fatal to her.

Post-Mortem Examination.—Having, through the kindness of Dr. Gordon, first procured a cast of her face, the articulation of the lower jaw was then exposed by dissection. When the thickened capsular ligament was cut into, the condyle of the lower jaw was found divested of all cartilaginous covering; it presented a rough, scrabrous-looking surface. The neck of the condyle was more than an inch long, and was double the size of the neck of the opposite condyle. From its inner side a large bony spiculum, about one quarter of an inch long, grew upwards and inwards immediately in front of the internal lateral ligament. The inter-articular fibro-cartilage was altogether removed, as well as all cartilaginous covering from the articular portion of the glenoid cavity, which was smooth, and expanded to nearly twice its normal size, at the expense of the maxillary eminence and root of the zygoma. The right ramus of the lower jaw, from its angle to the head of the bone inclusive, was not only an inch longer than natural, but was also much thicker than the ramus of the left side, and was also bowed outwards—circumstances which accounted for the swollen appearance of the right side of the face and the projection of the chin to the left. (R. Adams, M.D., *On Rheumatic Gout*, p. 268.)

Fig. 49 shows a lower jaw so like that figured in Adams's *Atlas* in every respect, that the preparations are evidently identical in their nature. It was presented to the College of Surgeons' Museum (2205) by Mr. Jeremiah McCarthy, and is thus described by Mr. Eve :

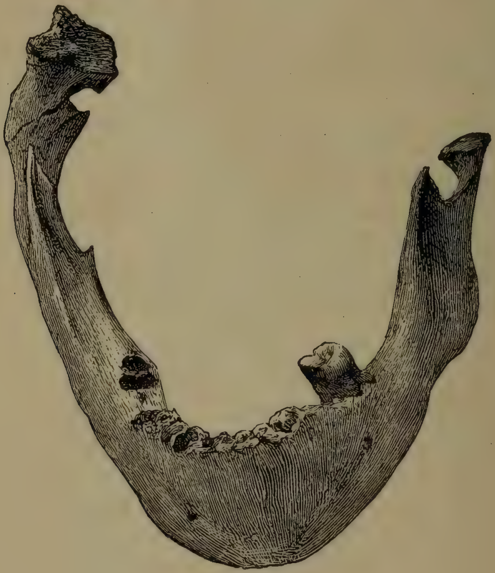

Fig. 49.

" A lower jaw with a mass of bone, having somewhat the form of an inverted pyramid, attached to the thickened neck of the right condyloid process. The upper surface of the mass, corresponding to the base of the pyramid, is flat and smooth, as if it had been covered with fibro-cartilage (Fig. 50). Upon its inner side is a deep indentation, from which a fissure extends outwards and downwards nearly to the external surface of the bone. The indentation and the fissure constitute

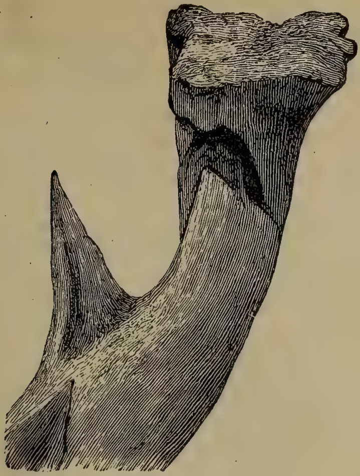

Fig. 50.

the upper boundary of a portion of bone which, from its form and position, might be taken for an enlarged condyle. The right half of the jaw is larger in all its dimensions than the left half, the breadth of the horizontal ramus in front of the angle being double that on the left side, which, from the slenderness of the coronoid and condyloid processes, appears atrophied. From a middle-aged man, who died with apoplexy. There was a remarkable deformity of the face from the deviation of the symphysis from the middle line ; and the projection of the enlarged condyle was considerable. The base of the skull was not examined, and nothing was found in the *post-mortem* examination except atheroma of the vessels. Nothing unusual had been noticed about his mouth in child hood, nor could any account of an injury be obtained."

A remarkable example of hypertrophy of the condyle of the jaw was placed in the Museum of the Westminster Hospital by Mr. Pearce Gould, and is described in the *Pathological Society's Transactions*, vol. xxxiii. I am enabled to exhibit both the preparation and drawing, from which it will be seen that the whole bone is remarkably asymmetrical, the left side being much larger than the right. It was removed from a woman, aged 24.

(*To be Continued*).

A NOTE ON ANKLE-CLONUS, WITH SPECIAL REFERENCE AS TO ITS PRODUCTION UNDER NITROUS OXIDE GAS.*

By Dudley Wilmot Buxton, M.D., B.S.,
Member of the Royal College of Physicians.

Anæsthetist in University College Hospital, in the Hospital for Women, Soho Square, and Dental Hospital of London.

(*Concluded from page 914.*)

Now, whatever view we adopt with regard to the production of ankle-clonus, we have to further explain how, under nitrous oxide the cerebro-spinal axis, the peripheral nerves, or the muscles, become so altered that this phenomenon can appear and vanish with recovery from brief narcosis. We know that the brain influence normally overrides spinal reflexes, and so we might suppose that the abrogation of cerebral function which obtains under nitrous oxide by cutting off inhibition, would leave the cord-centres free play to act. In support of such a view, we have the fact, well known to every practical anæsthetist, that in a certain number of cases the micturition and defæcation centres in the lumbar cord cease to obey the controlling centres, and extrusion of urine and fæces occurs. Or, upon the other hand, it appears open to suggestion that not only is there a cutting off from the higher or cerebral control centres, but the spinal cord itself appears to become profoundly affected. This influence travels down the cord, removing its action in the case of superficial reflexes, and at length abrogates the deeper reflexes, while it promotes the condition favourably for the production of ankle-clonus.

That such a profound change is worked in the cord would appear to be shown by experiments which I have made and published elsewhere.† In these experiments I found that, when an animal is placed under the influence of nitrous oxide gas, and the cerebrum observed through a trephine hole, it is seen to undergo a profound change. The substance of the brain swells, and increases notably in bulk, so that it protrudes from the trephine hole. Nor is this condition confined to the brain; for subsequent experiment showed that when some laminæ were removed from the neural arches of the spinal canal, and the spinal cord examined under nitrous oxide gas, a like change occurred. Thus the cord increased in size, forcing out cerebro-spinal fluid, and in this way establishing a fairly just criterion of the amount of enlargement of the cord. In the research referred to above I contrasted these curious results with those obtained when an animal has been deprived of air, and arrived at the conclusion that nitrous gas *per se*, and not asphyxia, is the active agent in the bringing about of these phenomena. It is not my purpose in the present connection to attempt any formulation of theory to explain the mode in which the enlargement of the brain and cord is accomplished. I have elsewhere shown there can be little doubt that it is of vaso-motor production. But, whatever may be such vaso-motor changes, it is clear that the delicate structures of the cerebro-spinal axis must be subjected to considerable pressure—not, of course, from without, but interstitially. Again, it cannot be doubted that such pressure exerted upon nerve cells and nerve fibres must interfere with or wholly abrogate the normal function subserved by these structures, and would, in fact, place them in the position of nerve structures which, being sclerosed or otherwise diseased, were disabled from physiological activity. There is this difference, however, that the condition consecutive upon nitrous oxide administration is very transient, and so deranges function, while in most cases it leaves no persistent anatomical alteration in the celebral and spinal centres. We thus see that actual physiological changes are observed in the brain and cord under nitrous oxide; and, viewed clinically, symptoms representative, or rather the clinical correlative of the structural variation, show themselves. Of these clinical correlatives, we are at present only concerned with ankle-clonus.

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* Read in the Section of Medicine at the Annual Meeting of the British Medical Association held at Dublin, August, 1887.

† Transactions of the Odontological Society of Great Britain, vol. xix, p. 90, et seq.

The loss of control of the higher centres—the "let go" theory, as it has been called—may come into play when nitrous oxide is given, by reason of a blocking of the cerebral centres through the vaso-motor changes above described. But the same variation in blood pressure occurs in the spinal cord, so that, even admitting the cogency of the arguments favouring the "let go" theory, I think we must admit that the development of ankle-clonus under nitrous oxide points to other adjuvant conditions. In support of this contention, it should be remembered that, while cerebral control is always lost, ankle-clonus is not always elicited under nitrous oxide. I would suggest that, while the brain's influence, being more or less cut off, may predispose the cord to exhibit its intrinsic powers, that further, a direct influence is exerted by nitrous oxide upon the nerve centres of the cord, which is of such a nature as to make the production of ankle-clonus possible.

That some marked changes are effected in the cord, correlative with the anatomical ones above described, admit, to my mind, no shadow of doubt: for, not only do we get well-marked cloni, but opisthotonus, emprosthotonus, and well-marked rhythmic jactitations attend nitrous oxide administration in a certain number of cases. The clonic and tonic contractions, it should be observed, so occurring are quite different from the irregular convulsions, the result of stimulation of convulsion centres, brought about by asphyxia.

In speaking of ankle-clonus as elicited in organic disease of the spinal cord, Gowers* draw attention to the fact that in some persons, in whom disease has advanced, any attempt to elicit ankle-clonus induces other reflex acts by, it would seem, an overflow of the stimulus over a too excitable cord area. The condition to which Gowers thus draws attention I have repeatedly met with in persons subjected to nitrous oxide administration.

And, further, it does not appear to me to be at all unlikely that the muscles themselves are more or less thrown into a condition resembling the hypertonicity which Hughes Bennett finds so frequently associated with functional paresis and paralysis, and which Tschirjew suggests as an exaggerated phase of a natural reflex tonus.

I am, then, inclined to submit that ankle-clonus, as occurring during the administration of nitrous oxide gas, is dependent upon changes, probably of an irritative character, occurring in hypertonic muscle, and brought about by like changes in the whole nervous area. Undoubtedly, sensory as well as motor nerves have their function vastly changed under this gas, a condition of hyperæsthesia being succeeded by one in which all sensation is lost.

One point further demands a few observations. Why, if nitrous oxide affect the nervous system in the marked manner I have attempted to show, does ankle-clonus not reveal itself as a routine phenomenon whenever this gas is administered? The answer really presents no difficulty when it is sought in a careful and close study of the phenomena elicited in a sufficiently large number of patients subjected to nitrous oxide administration.

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* Diseases of the Spinal Cord. Vol. I.

Firstly, as to dose, persons vary much in the amount of nitrous oxide they require to effect anæsthesia. Secondly, the amount of cord influence is found to vary considerably in different individuals. In some, the most violent jactitations, clonic and tonic muscular contractions, appear very early; in others these phenomena are slight, and only reveal themselves later. There can be little doubt that the condition of the brain and spinal cord, as regards their impressionableness to drugs, and especially gaseous bodies, is modified in individuals so that only those persons whose nerve channels are, so to speak, peculiarly susceptible to existing agents, would give marked nervous phenomena such as ankle-clonus. We find this condition occurs in about one-third the patients at present examined.

Finally, can nitrous oxide gas be considered a safe agent when it produces so direct and marked an effect upon the nerve centres? In my experience no ill-effect has ever resulted; I have found epileptics, persons who have had apoplectic seizures, hemiplegics, and those possessed of a highly excitable nervous system, to take gas and recover from its influence without mishap. Indeed, Dr. Turnbull, of Philadelphia, advocates the employment of nitrous oxide gas as a therapeutic agent in the treatment of epilepsy.

In the administration of a therapeutic agent, be it an anæsthetic or otherwise, it would be unreasonable to affirm that persons who are the subject of any organic or even functional disease are not always more or less anxious "cases" concerning whom special vigilance would be needed and given; but only a most exceptional case would deter the experienced anæsthetist from administering nitrous oxide gas.

Note.—I have purposely confined my remarks to ankle-clonus elicited under nitrous oxide, although the subject is germane to similar inquiries made when other anæsthetics are employed. To this subject I hope to address myself somewhat later.

NOTES ON THE PATHOLOGY OF INVETERATE NEURALGIA OF THE FIFTH NERVE,

Illustrated by cases treated successfully by Avulsion of the Nerve close to the Skull.*

By Victor A. H. Horsley, M.B, F.R.S., F.R.C.S.,

Assistant Surgeon to the University College Hospital, Surgeon to the National Hospital for the Paralysed and Epileptic, &c.

Mr. President and Gentlemen,

It is not, of course, my intention to weary you with details of cases of neuralgia which I have treated by operation, but I wish to bring before you certain points of interest in these cases, and more especially points in regard to diagnosis; points, moreover, upon which I am very desirous of obtaining information. For these cases have only come under my observation at a very late stage of the malady. The earliest period at which a patient has applied to me has been three-and-a-half-years after the onset of the mischief, whilst in one case it was as much as seven years after.

In all, cases, after operation, I have heard the same story, viz., gratification at being relieved from pain, and regret at the loss of so many sound and useful teeth. Are there then no indications by which we can diagnose pain which is due to mischief somewhere along the tract of the nerve from that which is due to disease of the teeth? If we could do this with some degree of certainty we should make an important step forward in dealing with these painful and often troublesome cases, and it is in the hope of being able to decide this question that I desire to have to-night the benefit of the experience of the Odontological Society.

Now if a patient comes to us complaining of pain in the area supplied by the fifth nerve I take it that we at once put the question to ourselves whether the pain is caused by mischief of cerebral origin, or whether it is due to peripheral irritation; and if the latter, whether the disease is somewhere along the trunk of the nerve or in the teeth.

It is scarcely necessary for me to dwell on the possibility of the pain being due to intra-cranial disease. The general rules for the detection of inter-cranial mischief will generally suffice for its discovery. The next question, viz., the diagnosis between affections of the trunk of the nerve and of its peripheral terminations, is, however, not so easy.

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* A Paper read before the Odontological Society of Great Britain.

Perhaps if I mention to you the main points in the cases which I have treated,—two of the patients are in the next room,—these will serve as centres on which the discussion may turn.

The first case is that of a man aged sixty, who had suffered for seven years before I saw him. All the branches of the fifth nerve were affected, but it was clear that the starting point of the attacks was the middle division of the nerve. The pain appeared to arise about the centre of the malar bone, and from that point it radiated over all the branches of the fifth on the left side of the face.

Thinking that the source of irritation was in the superior maxillary division, I cut down upon the infra-orbital branch, and following it up, removed as I believed the whole of the nerve as far back as the foramen rotundum. The pain was entirely relieved for the time, but returned in a few days in the palate. Thinking that the posterior palatine branch might have escaped me, I cut down upon the palate and removed the palatine nerve.

After this operation the pain ceased for seven months, when it recurred in the inferior dental nerve, and I was obliged to again remove a considerable portion of this nerve. I believe I am justified in saying that experience shows that it is not sufficient to destroy the inferior dental nerve as it lies in its bony canal; it must be removed close up to the foramen ovale.

You can reach the nerve perfectly well, without injuring any important structure, and without producing any appreciable scar,—provided of course, that primary union is obtained, —by adopting the following method.

The part being shaved, &c., a superficial incision is made, with strict antisepic precautions, just in front of the ear, and extending from the zygoma to the angle of the jaw. From this point a further cut is made along and below the edge of the jaw, as far as the facial artery. The triangular piece of skin thus mapped out is reflected forwards, great care being taken to raise with the skin only the superficial fat, *i.e.*, not quite to the deep fascia. The reason of this is that the branches of facial nerve as they issue from the anterior parotid gland course over the deep fascia covering the masseter muscle. The edge of the parotid gland must now be defined at the upper part, where Stenson's duct leaves it, and here it must be detached upwards and backwards from the masseter muscle. This can be accomplished with perfect safety to the surrounding structures, *e.g.*, the duct and facial nerve, by making a horizontal incision through the masseteric fascia from the posterior to near the anterior border of the muscle and then raising the tissues from off the muscle.

This done and all the parts held aside, the masseter is divided on the jaw and pushed upwards, together with the superficial parts, and downwards and backwards with retractors. The jaw is now trephined just in front of the strong ridge which runs down the outer surface of the ramus from the condyle. The outer plate of bone removed, the nerve is found in its canal at its upper end. The nerve and artery being pushed backwards, the ramus of the jaw is further divided upwards by bone forceps until the trephine hole is laid into the hollow of the sigmoid notch. The inferior dental nerve can now be followed up by pressing aside the fat and vessels to within half an inch of the foramen ovale. Here it is divided, and about an inch of it removed. The parts are then approximated, a catgut drain placed in the cavity and brought out opposite the middle of the incision, the skin carefully united by means of horsehair sutures, and the wound covered with a dry dressing of boracic acid, carbolic gauze, and a little sal alembroth* wool. Healing, so far, has invariably taken place *per primam intentionem.*

I performed this operation about seventeen months ago, and the patient tells me that he had complete relief until within the last week, when he had a few twinges in the palate, but none in the part supplied by the inferior dental. Whether or no this is going to be the commencement of a recurrence of the original mischief in the middle division I cannot say, but, at all events, the patient has had more than a year of complete relief.‡

The next patient was a man, aged sixty-five, for whom I performed the operation of removing the middle division of the fifth nerve only. This was followed by complete relief, and he remains cured so far. The operation was performed about nine months ago.

The third case is that of the matron of an infirmary, who had suffered severely for three-and-a-half years. Many drugs had been tried, and the only one which for some time seemed to control the pain was croton-chloral. I performed the same operation on her as on the preceding patient, and she also has obtained entire relief.

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* *Sal alembroth*, a double salt of perchloride of mercury and ammonia; wool soaked in a solution of this is used by surgeons as an antiseptic dressing

‡ September, 1887. These twinges disappeared after a few large doses of gelsemium.

The last case, operated on only a few weeks ago, and which I treated in conjunction with Dr. Blok, of Stoke Newington, was the worst I have ever seen. The patient, a lady, had not for a fortnight previous to the operation been able to take food by the mouth at all. The lower lip was very much swollen, and the slightest contact with anything caused intense pain, which was most acute in the inferior maxillary nerve, but radiated to the other branches of the fifth. It was so distinctly localized in the inferior dental nerve that this was obviously the one to remove. I therefore performed the operation just described. A slight salivary fistula resulted, but this did not interfere with the healing of the wound by the first intention, and the fistula rapidly closed on the application of caustic by Dr. Blok. The patient has been quite free from pain since.

These, then, are briefly the details of the cases upon which I now propose to dwell for a few minutes, and I think it will be better, for the purpose of fixing the points of the problem before us, if we consider for a moment the anatomy of a mixed sensory nerve, and thus place the question on a broad basis.

In the first place we must admit that, whatever may be the ultimate physiological explanation of the fact, there must be in a mixed nerve fibres which exert a trophic influence on the parts supplied by the nerve, and if these are damaged, degenerative and inflammatory mischief will occur.

Next we have fibres of common sensation coming from the skin.

Thirdly, we have vasal fibres going to the vessels.

And, lastly, we have fibres of special sensation; in this case, of course, coming from the teeth.

Then all nerves, so far as we know, are themselves provided with fibres of common sensation, that is to say, fibres which terminate in end-organs in the sheath of the trunk of the nerve, and which give it common sensation. The fact is a comparatively novel one; it was foreshadowed by Professor John Marshall in his Bradshaw Lecture for 1884, and anatomically demonstrated by myself in 1885.*

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* Royal Medico-Chirurgical Society's Proceedings.

Now the problem for us to-night is, can we diagnose between irritation affecting the trunk of the nerve, and that affecting its terminations? This is the point upon which I ask your assistance, for, as I said just now, I have no experience of the initial stages of the trouble, the time at which it is most important that a correct diagnosis should be made; and conclusions based upon the symptoms of the latter periods of the disease may not be altogether reliable when applied to explain those of earlier stages. But, speaking from the point of view of cases as I have seen them myself, it has occurred to me that there are some points that may help us to attempt a diagnosis of this sort.

If the mischief affects the termination of the nerve, it will be clear that there can be no changes in parts which are supplied by other branches of the nerve, except through reflex action. For instance, we should not expect to get wasting of one side of the face as the result of neuralgia commencing in the teeth, or if this did occur it would be very slight. But if, on the other hand, the mischief should be somewhere in the trunk of the nerve, one would expect these trophic changes to occur. And I believe that this is the case.

In short, that pain which is of reflex origin is not accompanied by obvious changes in the part to which the pain is referred, whereas pain which is due to disease of the trunk of the nerve usually is.

Now what are these changes? I have spoken of wasting, but there are various other pathological conditions which may be met with. The patient whom I last operated on presented some of these in a very marked degree. The lower lip was greatly swollen and very sensitive, the skin being glazed and shiny. The same thing was noticed by Mr. Walsham in his report of two cases of this kind. The condition is, of course, primarily, a vascular one, and instead of this state of chronic congestion, the vessels may be at one time dilated, and at another in just the opposite condition. So much for the trophic and vaso-motor fibres.

(*To be continued.*)

METHODS OF USING IODOFORM.—Eighty parts iodoform, fifteen parts oil of cinnamon, and five parts finely powdered ground coffee, packed into a foul root, will disinfect it, and also prove a very agreeable dressing.

British Journal of Dental Science,

LONDON, OCTOBER 15th, 1887.

THE DENTAL REGISTER AND ITS REVISION.

It has been our aim in this Journal from its very beginning to attempt the promotion of the best interests of the whole Dental profession; untrammelled and unfettered by class or clique, we have ever striven to take the widest views, while we have never refrained from criticism whether adverse or favourable. But criticism may be premature, it is frequently unfair to take stock of men's actions until they have had fair time to unravel and adjust themselves. And so is it with the Dental Register. Within the whole range of practical Dental politics, there is nothing more important, whether for the profession or for the public at large, than the condition of this work. Truly has it been said, "the Register is a pivot upon which every provision of the Dentist's Act revolves." Inaccuracy in this Register practically renders that Act not only a dead letter but a snare and a delusion. In justice, everyone would allow that the compilation of the original copy in 1879 was attended with many and unavoidable difficulties. The wording of certain clauses of the Act was ambiguous, and the legal mind making confusion thrice confounded put various and conflicting interpretations upon these clauses. Again, there was in those days no representative dental body from whom assistance could be obtained in prosecution of the work, but perhaps the most potent hindrance of all lay in the fact that the work was placed in the hands of a council wholly ignorant of matters dental, and, therefore, incompetent to provide for dental requirements. Under these circumstances, it is no matter of surprise that the initial Register should have proved inaccurate, nor perhaps should we be greatly astonished that a considerable delay has been allowed to take place before an attempt has been made at a thorough revision. A hasty and partial correction of certain superficial mistakes would have been of little value, and might have been detrimental by postponing the entire work. Moreover, the dentists themselves, whose assistance is indispensable, are very imperfectly organised, and unhappily have exhibited but little public spirit with regard to the politics of their profession. Even at the present time it has been left to the almost unassisted energy of one man, Dr. W. H. Waite to give this question prominence and to urge the necessity of its full investigation. As an outcome of much patient work and vigorous jogging of the official mind a move has at last been effected. During the past month or so, official letters of inquiry have been sent te everyone whose name appears on the Dentist's Register. These letters have for their objects to ascertain firstly whether the individual addressed is still alive, and secondly if he continues to practice as a dentist at the place given in the Register. These inquiries are authorised by the Dentists' Act, which further provides that if the letters be left unanswered for six months the name of those who neglect to reply may be erased from the Register. Considerable misapprehension appears to have arisen in the minds of dentists concerning these letters. Mr. ——— who has been in practice 15 years in one house resents being asked if he is alive and believes that all men should know that he still resides among his father's *lares* and *penates*. He, with many others, fails to recognize that as the sequel will show the compilers of the Register are seeking to protect him and such as he from unscrupulous and dishonest traders upon the Register's inaccuracies. It cannot be too strongly insisted upon that every dentist who receives a letter should at once answer its queries, and to the utmost of his ability should facilitate the work of revision. The process of obtaining correct information concerning the death of practitioners is not easy, and it is necessary that satisfactory evidence of death should be forthcoming before the names of deceased persons can be erased from the Register. This is one of the spheres in which the assistance of dentists themselves is absolutely essential to a complete revision, nor can the importance of forwarding information of this kind be over-rated. Certificates of death, when such can be obtained, or other evidence should be sent direct to the Registrar of the General Medical Council, 299, Oxford Street, London. Some persons seem to imagine that the names of dead men when left upon the Register can do no harm. This is, however, a great mistake. So long as a name remains unerased any unregistered person may assume that name and continue to practice at the same address. Not only so, but the advantage secured to the public by compulsory registration is entirely lost. It was through the pages of this Journal that the scheme of Compulsory Education and Registration was first ventilated, and we, therefore now deem it our duty to advocate and to support to the utmost of our power the present effort which is being made for the improvement of the condition of the Dentist's Register since by so doing we feel that its value both professional and public will be materially enhanced.

THE L.D.S. ENG. EXAMINATION.—The next Examination for the License in Dentistry of Royal College of Surgeons of England, will take place on Oct. 31, and Nov. 1st and 2nd prox.

THE WASHINGTON MEETING.—We publish a brief resumé of the work done in the Dental Section of the International Congress. It can hardly be said that England has taken much pains to impress her transatlantic brethren, but on the whole the meeting has been a success, and has, we hope, brought the professions in America and England more into touch.

THE DENTAL REGISTER.—Have you received a letter from Mr. Miller asking if you are alive, and if you, being alive, are still in practice in the house from which you registered? If you have, it is your duty to answer at once. If you have been so elated by getting your L.D.S. as to forget to register it at 299, Oxford Street, please to remember that you are not a dentist in the eyes of the law until you have been registered, and that all your labour is in vain until you have made the desirable acquaintance of the Registrar. After all, it looks very nice to see your name neatly printed upon the pages of that handsome red and gold volume.

DINNER OF PAST AND PRESENT STUDENTS OF THE LONDON SCHOOL OF DENTAL SURGERY, Leicester Square.—This annual event has been fixed for 3rd of December next, and a large muster of old friends is expected. The dinner this year should prove especially attractive, for much of interest has been got through in 1886-7, and, of course, the Metropolitan Schools have had their share in the matter. Any one going through Leicester Square also will see that the old hospital is extending its domains, and doubtless there are very many country and outlying town dentists, past students, who will like to hear of the increasing successes of the school which reared them, and who will welcome the opportunity of giving—don't be alarmed—their moral support to the proceedings. We have not heard that the hat is going to be sent round, so you need not forget to take your check book with you.

THE USE OF STEEL *v.* CAST IRON BOTTLES FOR NITROUS OXIDE—Writing to a contemporary, a partner in Barth's firm cautions against placing light steel bottles containing nitrous oxide near a fire, because if you heat these bottles to boiling point they will burst! Very rightly, we think, for anyone who parboils nitrous oxide in any bottle richly deserves being made personally acquainted with a bursting steel bottle—it will teach him better.

EDINBURGH DENTAL HOSPITAL.—From the report the Secretary of the Dental Hospital and School, it is shown that 1,828 patients were treated at the institution during the past quarter, of whom 817 were males and 679 females; sixty-one cases were anæsthetised, and 271 stoppings were effected.

MYRTOL is that portion of oil of myrtle which boils at 320 deg. to 338 deg. F. It is a disinfectant.

THE DEATH OF PROFESSOR VON LANGENBECK.—Those who were present at the meeting of the German Scientific Congress last month at Wiesbaden rejoiced to see in their midst,just recovered from a severe illness, the Nestor of German surgeons, Bernhard von Langenbeck. The deceased, who was born in 1810 at Horneburg, in the province of Hanover, was a nephew of the celebrated surgeon and anatomist, Konrad Langenbeck, who was for nearly half a century Professor of Anatomy and Surgery at Göttingen. He studied at Göttingen, where he graduated in 1835. Immediately afterwards, he travelled to France and England, returning to Göttingen, where he established himself as Privat-Docent in Physiology, and entered upon the practice of surgery. Shortly afterwards he was made Supernumerary Professor, and in 1842 was nominated Professor of Surgery at the University of Kiel, and Director of the Fredrichs Hospital there. His connection with the army began in 1848, when he directed as Generalstabsaerzt of the army, the surgical department in the hospitals during the war of the Duchies against Denmark ; in the same year he was summoned to Berlin to succeed Dieffenbach. He thus became, at the early age of 40, Professor and Director of the Berlin Royal Surgical Clinical Department, the greatest of its kind in Germany. He was one of the highest medical officers of the Prussian army ; in this position he accomplished a great reform in military surgery. After the Danish campaign of 1864, he was ennobled by the King of Prussia. In civil life he also attained a position of great eminence as the leading surgeon of Berlin. His reputation as an operator is world wide. Numerous old methods of operation were improved by him or new ones devised, and many provinces of the art were opened up by him. Especially did he do much to advance conservative surgery by the use of resections. He established certain indication, and extended the method of immediately fixing the limbs by the plaster-of-Paris bandage. He died of an apoplectic seizure, September 29th.

BONE GRAFTING.—At a recent meeting of the Surgical Society of Paris M. Richelot described a case of pseudoarthrosis of the lower jaw, cured by osseous suture. The patient was a hysterical girl, aged 16, with an asymmetrical condition of the face, due to the fact that the maxillary bones did not correspond. Two centimètres of bone were excised through the mouth. Owing, however, to the patient being troublesome and disobedient, a hard fibrous growth was formed between the two fragments. The fibrous tissue was divided ; the two fragments were drilled, and re-united by means of a graft of bone taken from the tubia of a calf, previously rendered aseptic. The result was satisfactory.

TRANSPLANTATION OF TEETH.—The loud pœans which have been dinned into our ears about replantation into artificial sockets have awakened those lay-pressmen who read last year's "Times," and don't know it, and have given them a general impression that Younger has been transplanting teeth into natural sockets. "American dentists," if you please, have been successful in this transplantation of teeth ! A dreamy member of the profession actually takes the trouble to write to the paper in which the matter is ventilated, and declares that transplantation has been successfully performed in England !

This reminds us of a highly intelligent "American dentist" who came over here, and who, having learnt a thing or two, decided to introduce the removing of decayed teeth by a method called extraction. It was a dissappointment to that man to discover that extraction was tolerably familiar even to those benighted persons called English dentists !

As a matter of fact, Hunter's experiments with the cock's comb led him to test the question whether transplantation of teeth from healthy to diseased jaws was feasible. But Hunter was forestalled by that wonderful man, whose discoveries are daily being resuscitated by our younger surgeons, we mean Ambroise Paré. It is very unsafe nowadays to call anything new ; it is wiser to refer to Neale's Digest, and then ask a rival if he has ever heard of the mateer before—ten to one he has, and will let you have the information.

SOMETHING ABOUT TOOTHPICKS.—The National Toothpick Association has contracted for enough toothpicks to be made in Maine the coming year to load a train of fifty trucks with nothing but toothpicks. They will take out of Maine before next June five thousand million toothpicks. A pretty fair sized wood ,will be slit up to go into the mouths and vest pockets of millions of Americans. Maine furnishes the larger portion of all the toothpicks used in the country. This association controls the trade. It is something like the Standard Oil Trust, the Cotton Seed Oil Trust, and the lately formed Rubber Trust. It regulates the price and output of toothpicks as the big trusts regulate the prices and output of oil or rubber goods. They have a mill at Belmont, N. Y.; Harbor Springs, Mich.; and Fond du Lac, Wis. Except these, all their mills are in Maine; one at Strong, one at Farmington, one at Canton, and two at Dixfieldr There is a small mill at Mechanic Falls, also, but it has not joined the association. In Massachusetts, also, there is one small mill not in the association. Maine is the great centre of the industry of toothpick making. *The Western Dental Journal* received this interesting communication from Mr. Bridgman, who represents the association.

PROPOSED LAW REGULATING THE PRACTICE OF DENTISTRY IN FRANCE.—In the bill recently presented to the Chamber of Deputies in France, the following relates to dentistry: The practice of dentistry is forbidden to all persons not provided with the diploma of doctor or *officier de santé.* Nevertheless, any dentist over thirty years of age, who can show by his license that he has practiced his profession for two years before the promulgation of the present act, is allowed to continue to do so. This permission, however, does not include the right of administering anæsthetics. Foreign medical diplomas are not registrable except in special cases covering the city of Paris. From the above regulations, it may be seen that a D.D.S. member of the American Medical Association would have some difficulty in beginning practice in France. If the bill passes, fewer Americans will go to Paris to practice dentistry, as all the examinations will be conducted in the French language.

Removing Iodine Stains.—*Repertoire de Pharmacie* describes a method of removing the disagreeable yellow stain produced upon the skin by the application of tincture of iodine, and which in ordinary cases remains for a considerable time. In the case of the hands, we are told, where the skin has become hardened, dilute ammonia, soda, charcoal, or common soap may be employed ; but in treating women, whose skin is tender, and for those parts of the body, such as the face and neck, where the epidermis is not hardened by friction and exposure, it is preferable to employ the sulphite or bisulphite of soda, which is not irritating, and at once absorb the superfluous iodine to which the same is due. The sulphite of soda has been used for this purpose in solution varying in strength from $\frac{1}{100}$ $\frac{1}{16}$ in water. The liquid is penciled on to the place where the tincture of iodine has been applied, or used in compresses. In a few moments it will be found that the pain and irritation caused by the free iodine, as well as the disagreeable yellow stain, will have all totally disappeared, to the great satisfaction of the patient. As tincture of iodine is in daily use, and many persons are prevented from visiting or receiving visits for many days after an application of it, the little recipe above mentioned will prove frequently of great service.

Tannin for burns has been so persistently urged upon the dental profession that we feel bound to suggest it to our readers. An ethereal solution of tannin of the consistency of thick cream is useful in the treatment of burns and scalds. The evaporation of the ether leaves a pliable, non-elastic coating superior to collodion. It does not wear away with gentle friction, for soon dries, and very quickly relieves the intense pain of a fresh burn or scald.

Neuralgia of the Tongue and how to Cure it.—A Chicago surgeon has succeeded in arresting persistent neuralgia of the tongue for a period of more than one year, by operating as follows :—He makes an incision at the entrance of the inferior dental nerve into the inferior dental canal, sufficiently large to allow of the pulling out or stretching of the nerve about one-half inch, which is then divided and the half-inch removed. In one case the external operation was made, the nerve exposed and a portion removed. Pain occurred in a few months. The lingual nerve was then exposed and operated upon twice, without success. The operation above mentioned was then performed, and so far there has been no symptom of returning pain. This, says an exchange, is a feasible operation and one which a skilful dentist ought to be capable of making with little risk or danger. It ought to be attended with little hæmorrhage, and can be made painlessly by previously injecting cocaine (four per cent.) or using Viau's solution (cocaine dissolved in a two per cent. solution of carbolic acid, ½ gr. in x minims). Whitehead's staphyloraphy gag can be used, or any approved mouth-prop.

Abstracts of Foreign & British Journals.

SOUTHERN DENTAL JOURNAL.

NEURALGIA—ITS ASSOCIATION WITH DENTAL LESIONS.

W. C. Wardlaw, M.D., D.D.S., Augusta, Ga.

Neuralgia is an affection appertaining to sensory nerves.

The term has been much misused.

The writer proposes to show that a large majority of the neuralgic pains about the face and head have specific causes, and that these causes are "dental lesions."

Pain is the most distinguished characteristic of "neuralgia." Some pain is only exalted, or perverted sensation, it might be inferred that all painful sensations are "neuralgia." But pains, ordinarily, are the result of a decided disturbance, of the parts to which the terminal filaments of nerves are distributed, whilst "neuralgia" is a generic term, applied to certain morbid conditions of the nerves, without any manifest inflammation. The neuralgias with which we will have to deal, will be mostly those from reflex irritation.

Neuralgia in general is widespread. Those most subject to it are the anæmic, the debilitated, the pregnant female and persons of a syphilitic, malarial or mercurial diathesis. Fatigue, exhaustion and exposure are exciting causes. It is unilateral and superficial, and usually exhibits itself near the external orifice of the bony canal of a nerve. There are no inflammatory signs of heat, redness or swelling. After a time the painful spot may become sore to the touch, and red. Complications may exist, secondary affections of other nerves, hypersecretion of glands, inflammation and ulceration.

Pain is the diagnostic symptom, and individual experience alone determines the situation of the neuralgia and maps out its erratic track. The attacks are irregular, sudden, and intermittent. The pain may be lancinating, darting, burning, boring, stabbing, &c. The slam of a door, a breath of cold air, an acrid taste, an attempt to laugh or sneeze may bring on an attack. After a time the attacks increase in frequency and severity, until the patient, in extreme cases, is worn out. This may follow sudden shocks, a injury to the nerve, pressure upon its trunk by tumours, aneurisms, exostoses, &c.

The neuralgia in question are those severe and flitting pains manifesting themselves in the eye, ear, cheek, forehead, lower jaw—for convenience called "facial" neuralgia—and all the parts to which the fifth pair of nerves is distributed. Fully three-fourths of these cases, besides many cases of neuralgia of the shoulders, arms and head are due, the writer thinks, to dental irritation. He believes medical men often overlook these cases.

Numerous cases may be cited where skilful physicians had failed to benefit their neuralgic patients, although the remedy was promptly and permanently effected by a dentist discovering and removing a dental lesion. These lesions are often so obscure in locality and character, that it requires the most scrutinizing search of a painstaking and experienced dentist to uncover them.

The Fifth Pair of nerves is the great organ of sensation of the parts about the face and head, and has a wide range of sympathy through its plexuses and ganglionic connections. Its bisection is followed by insensibility of the skin of the face and the adjacent mucous membrane. The first division the Ophthalmic sends branches to the ophthalmic ganglion of the great sympathetic, to the parts about the eye and nose and to the integuments of the forehead and scalp. The second division, the superior maxillary, supplies the upper teeth, the antrum, the lower lid, cheek and upper lip. The third division, the inferior maxillary, is a mixed nerve, containing motor and sensitive fibres, and the nerve of special sense, taste. It gives sensibility to the temple, the external ear, the lower teeth, the chin, lower lip, and inferior portion of the face. The ophthalmic and Meckel's ganglia are the great supply points of connecting lines for the first and second divisions, and the otic and sub-maxillary ganglia for the third division. We thus have a perfect network of nerve telegraphs, associating all these parts in close relationship and active sympathy. Their many connections render it an easy matter for a painful impression to be conveyed between widely separated points.

The current of "sensation" flows from without inwards, and the impression made upon the sentient extremity of a nerve is conducted to its receptive centre, there to be registered; the nerve trunk always transmitting that impression—and only that—peculiar to its terminal distribution. The brain seems to have become so habituated to this sort of thing that any stimulus anywhere along the course of a nerve is taken cognizance of and referred by it, not to the point of irritation, but to where the terminal filaments are distributed. A familiar illustration of this law is to be seen in the case of an amputated limb, where the patient suffers pain in the fingers or toes long since lost, because of an irritation of the trunk of the nerve in the cicatrix. One more illustration because of its appropriateness I will cite. An edentulous patient may actually suffer from toothache through the pressure of a plate upon the gums. Some peripheral nerve filament is thus irritated and the impression being conveyed to a nerve plexus is reflected along a dental nerve and taken of by the brain, as having been made upon the filaments terminating in the supposed aching tooth, long since extracted.

It is another well established principle of reflex nervous action, that an impression, sensitive or motor, may be reflected from one point to another through the great sympathetic system.

What are some of these dental irritations, or lesions? First, an exposed pulp may be a fruitful source of trouble, causing not a toothache but a neuralgia of the ear, cheek, &c. The exposure may be so obscure as to excite no suspicion of its existence. An upper tooth may ache from a lower, and *vice versa*, or several teeth may ache from a single exposure. It is sometimes difficult to convince a patient that a particular tooth, or indeed, any tooth is the cause of their trouble.

Secondly, a pulpless tooth is always a weak point in the system, and probably induces more cases of neuralgia than any other dental irritation, and is least suspected by patient. An oculist will send you a patient suffering with his eye, to have his teeth examined for a possible cause of his trouble. After a careful search for caries you may feel satisfied that the teeth are blameless in the matter. But a more scrutinizing examination, by tapping with an instrument, reflecting light from a mirror over the teeth, touching the teeth consecutively with ice, etc., you may be rewarded by finding a tooth, the pulp of which has died spontaneously you may say, and you may feel safe in diagnosing this as the cause of trouble.

This chronic condition is more provocative than acute irritation of pulp exposure, the writer believes that a tooth whose vitality has been destroyed by accidental violence, is more often the source of neuralgia, than one whose pulp has succumbed subsequent to filling. Here malaria, wet feet, exposure, &c., put in their appearance as exciting causes. But, a devitalized tooth, one containing a dead pulp, one with the pulp removed and canals filled, one with abscess, one with cured abscess, is noticeably a very predisposing cause of facial neuralgia.

Thirdly, we often observe neuralgia associated with deep-seated caries, particularly of that kind containing the leathery dentine. Again, even in superficial caries, it is surprising to notice that acidity of the saliva, by increasing the sensitiveness of buccal cavities, is accompanied with neuralgia. The writer was led to appreciate this fact by the case of a patient who had a number of cervical cavities. Whenever she had a neuralgia attack, search would reveal one of these cavities, sometimes very small, and relief followed its being filled.

The slightest leak of a gutta-percha or amalgam filling would be followed by a recurrence of neuralgia which would disappear with the renewal of the filling.

The writer has traced neuralgia to the presence of gold and amalgam in the same cavity; and so, too, it might follow the contact of different metals in adjoining or antagonizing teeth, or of a gold clasp and an amalgam filling.

The presence of tartar, the writer has experimentally proved to be an exciting cause. Another indubitable cause is the denuding of the cementum by the recession of the gums from the necks and roots of the teeth. This is in the case of suscentible patients, but is more frequent than is generally supposed.

Wisdom teeth impacted in the ramus is a frequent cause of neuralgia; so, too, roots of teeth, exostosis, calcification of pulp, mercurial salivation.

Ear ache follows trouble in the lower third molar, sometimes in the second, and occasionally in the first. The superior molars induce head-ache, more or less constant, and acute pain about the supraorbital notch, and near the frontal suture. Pain in the cheek and infra-orbital region is apt to be induced by lesion of the bicuspids. And the popular idea of a connection between the cuspid and the eye seems to be borne out by the frequent occurrence of neuralgic pains in the eye when the eye, tooth or first bicuspid, is diseased. Neuralgia of the posterior scalp and the shoulder may proceed from a dead lateral.

THE DENTAL REVIEW.

CAPPING EXPOSED PULPS.

By George H. Cushing, Chicago.

He touches upon the natural limitations of conservative treatment of the dental pulp—

There is no physiological reason why exposed pulps should not be successfully treated and capped, but there is an anatomical peculiarity which unquestionably limits the posssibilities of conservative treatment.

This lies in the fact that the pulp is situated in a cavity with absolutely unyielding walls, while its vascular and nerve supply enter it through a very minute opening in the same dense structure, so that any swelling from inflammation or other causes, would produce greater or less constriction of the vessels of the pulp at the point where it is most essential that the blood and nerve supply should be uninterrupted and unimpaired.

The methods of treatment are various.

There are two methods which are probably generally pursued—the one, the older, being oxychloride of zinc, the other the oxyphosphate of zinc.

Oxychloride of zinc has been used more or less since introduced by Dr. Keep of Boston in 1858 or 59, but it came prominently to the front about 1866 through the advocacy of Dr. W. H. Atkinson of New York, who claimed for it extraordinary success.

Its use was found to be frequently attended with great pain and many believed it to be too irritating, and that its irritating property was the inaugration of conditions which culminated in the death of the organ, though it was claimed at one time that the pain and irritation were desireable features.

Hence the use of oxyphosphate of zinc, and exposed pulps were capped with the latter material almost as extensively as they had before been with the oxychloride, and at first it was supposed with greater success than by the former method, Time however, which tests all these methods inexorably, seems to have demonstrated that this material is no more to be relied on than was the oxychloride !

These experiences very naturally suggest the inquiry whether the causes of failure are chiefly to be sought in the the material used for capping?

It is more than probable that the limitations imposed by the peculiar anatomy of the pulp before referred to, has more to do with many of these failures than the material employed.

When there has been inflammation, or even irritation of the pulp, it is very probable that in many cases some permanent injury is affected by reason of the constriction of the nerves and vessels passing through the minute foramina and canals, which though seemingly cured at the time of the operation, yet develop sooner or later—a condition which results in the death of the organ. We can only know what conditions are present in the pulp by outward symptoms, and though a pulp may remain quiet and seemingly healthy for several years, yet its death may occur at any moment. The capping of an exposed pulp is always an experiment.

The following may briefly describe the methods te be pursued :

The tooth should be isolated by means of the rubber dam. The cavity should if possible be opened so as to give a good view of its entire interior. The debris and softened dentine should be carefully removed without impinging upon the pulp and without pain. The cavity should then be saturated with pure creosote, which should be allowed to remain a few moments to become absorbed, when the cavity should be very carefully dried, and a drop of Fletcher's carbolized resin should be placed over the point of exposure and left for two or three minutes, when the excess should be dried off with bibulous paper and then the whole surface of the cavity, which is to be covered with the capping material, should be varnished with copal dissolved in ether. When this has hardened, which will be in a few minutes, the capping, either of oxychloride or oxyphosphate of zinc, should be *flowed* over the point of exposure to the depth or thickness desired. The capping should never be *forced* into place, for injury may and is almost certain to follow any compression of the pulp. When the capping is sufficiently hardened. the filling, either temporary or otherwise, may be proceeded with.

Speaking generally, the author finds diseased pulps should be treated for whatever condition presents itself on general principles, just as other tissues or organs are treated under like diseased conditions. A routine practice of treatment is dangerous.

Failure may occur in the hands of the very best operator caused by the anatomical peculiarity referred to above. The treatment of exposed pulps more than in any other special operation, the least neglect or carelessness is likely to prove disastrous.

After the age of twenty-five, the chances of success are small, even with recent exposures and healthy pulps. Under that age, all cases in which there has been inflammation, though they may seem to do well for awhile, are to be regarded as liable at any time to fail, while in those cases where there has been sloughing of any portion of the pulp, failure is to be expected in a large majority of cases.

CAPPING EXPOSED PULPS AND THEIR CONSERVATIVE TREATMENT.

By A. W. Harlan, M.D., D.D.S., Chicago.

Exposed pulp is understood to mean a condition whereby the dentine is removed from its surface, wholly or in part, generally limited to some portion of the crown or neck of the tooth. This accident is either the result of caries, fractures of the tooth, accidental exposures in operating, or the deliberate removal of softened dentine.

What is a pulp? A tooth is composed of enamel, cementum, dentine and a highly vascular organ called the pulp; it is enclosed by dentine save at one point, the apical foramen, where the cementum surrounds it. It is the remains of the dentine bulb and the external layer of cells, adjacent to the dentine, are called odonto-blasts, from whence may be seen to penetrate the dentine, the dentinal fibres. The pulp has a coronal outline resembling the shape of the crown, gradually lessening in size, and taking on the shape of the root or roots until it terminates in a minute thread, passing on to its connection with blood vessels and nerves from whence it derives its vitality. The pulp has no tactile sense, although it is a very sensitive organ and teeth containing living pulps are sensible of thermal changes. Acids, alkalies and sweets profoundly impress it; as do extreme drying, or electric currents. It contains blood vessels and nerves, and hence it may inflame, become congested and strangulated. It may also become atrophied, calcified, sclerosed, mummified, hypertrophied or it may suppurate or die at times without warning. As caries approach the pulp, the tooth often becomes sensitive to pressure of mastication, when food is pressed into the cavity or a tooth-pick is used to remove it. An uneasy feeling occurs which increases until the tooth aches. In an ordinary practice not more than twenty per cent. of such cases will be found to present an actual exposure of the pulp, even after the removal of food and the softened dentine. All such cases when the patient is in a good physical condition and is not more than fifty or sixty years of age, and no exposure is found, will be susceptible to treatment without destruction of the pulp, if it is protected from thermal changes by the introduction of a non-conductor, which is a non-irritant. In 80 per cent. of non-exposures, Dr. Harlan first washes the cavity with tepid water, removes the debris carefully, keeping the cavity flooded with eugenol, or equal parts by measure of gum camphor, crystals of carbolic acid and alcohol, or thymol crystals 2 parts, ol. gaultheria 1 part, ol. sassafras 1 part, and 95 per cent. carbolic acid 2 parts, or a ten per cent. solution of the alkaloid of cocaine in eugenol. The pain being arrested, a dressing of either of the above combinations is used, which is covered with soft gutta percha, a solution of gutta percha in chloroform or a plug of cotton soaked in sandaric varnish, to which ten per cent. of resorcin crystals has been added.

This is allowed to remain about four days when it is removed, and a dressing is applied composed of deodorized iodoform paste. This is made by taking eighty parts iodoform, five parts pulverized roasted coffee, and fifteen parts oil of cinnamon. The paste is smeared over a piece of punk or paper fibre lint, and made to cover the bottom of the cavity. The whole cavity is then filled with soft white gutta percha, or equal parts of pink and white gutta percha. After the lapse of two weeks or longer the dressing is removed and the cavity bathed in one of the aforementioned combinations, dried, and the oxysulphate of zinc, in a creamy paste, flowed over the bottom of the cavity, and allowed to harden. It is then varnished with copal-ether varnish, and then oxyphosphate of zinc packed over this, and then gutta percha completes the filling for the time being. If the patient is under thirty years of age the tooth can be filled permanently at this sitting. If a pulp is accidently exposed by fracture, or when excavating a cavity, in a subject under thirty, the mode of treatment is as follows : arrest the bleeding, apply to the exposure deodarized iodoform, or iodol paste, made of ol, gaultheria and iodol, then cover with oxysulphate of zinc aud over this must be placed the copal-ether varnish, then fill at once with gutta percha allowing it to remain not less than 30 days nor longer than 90 days. If a patient is over thirty when the tooth is a molar, Dr. Harlan destroys the pulp at once. All hypertrophied pulps as a rule it is best to destroy at once. There are a few exceptions in the very young, in whom he destroys with chromic acid, nitrate of silver, or nitrate of zinc, when the eschar separates from the pulp, he uses eugenol as a dressing or iodoform and eucalyptol made into a paste ; sealing the cavity at first for three or four days, then for a week, and afterwards for a period of ten days. Cap in the manner described above. There are many forms of odontalgia and many teeth of young people ache from exposures of the pulp, pulpitis. If the pulp needs to be punctured through the cavity in a tooth, unless the person be young (under 30), there is little hope of its recovery. He treats such cases, and those slight inflammations of the pulp as follows : first the pain is arrested, by counter-irritation ; he paints the gum opposite the affected tooth with equal parts tincture of iodine, tincture of aconite root and chloroform, then applies te the pulp tincture of opium, or iodoform and oil of cinnamon in a thick paste, using no pressure. Covering with cotton, only at least for two or three days. If there is no pain do not remove the dressing for that length of time. When the dressing is changed do not allow saliva to get into the cavity. Keep the patient's bowels open and let him be directed to care for the tooth, by not eating sweets or other substances likely to cause toothache. After changing the dressing two or three times the cavity may be gently sealed without pressure. Allow this to remain six days only, for fear that the dressing may lose its potency on account of not being sealed hermetically. Then change it again and seal with soft gutta percha for two weeks ; if at the end of this time the pulp has a good color and there is no soreness of the tooth, by percussion, cap as previously directed, but do not fill the main cavity permanently for six months. Many teeth with exposed pulps would do better if they were protected from the thermal changes even longer than this. Dr. Harlan does not treat or attempt to cap suppurating pulps, except with arsenic or the forcible extraction of the pulp, under cannabis indica or cocaine-ether.

To obtain the best results in the treatment of exposed pulps, or in the treatment of any other abnormality, the practitioner must take into consideration the constitutional conditions of his patients.

In patients of a syphilitic, scorbutic, or scrofulous diathesis, to cap is exceedingly risky ; and when congestion of the pulp has occurred in such subjects, failure is almost certain.

In a healthy patient, under 40, having an exposed pulp, when the exposure has not been followed by pain except by contact with sweet, sour, or salt condiments, or by thermometrical changes, and the pain has been of a short duration, the writer would cap the pulp with hope of success. If, however, the patient is over 40 and the pulp has been congested several days and is painful, causing nocturnal insomnia, devitalize it.

He remarks that a pulp which has been exposed is very liable to die after it has been capped, no matter who has capped it or what material has been employed in capping.

If it is possible to preserve the vitality of an exposed pulp, the subjoined treatment will serve. Adjust the rubber dam and with spoon-shaped excavators carefully remove decay from the cavity without wounding the pulp. Use an antiseptic solution, which *is not* an *irritant*, to bathe the cavity. Have the solution of a temperature of about 98 deg., thereby preventing a shock to the pulp and a congestion of that organ, which might ensue. The solution may be 2½ per cent of carbolic acid in water ; it may be eugenol, or any of the numerous other agents possessing non-irritating antiseptic qualities ; the cavity then dried and dusted with iodoform. A mixture of oxy-sulphate of zinc is then prepared to the consistence of thick cream and placed in contact with the pulp so as to cover it and the base of the cavity ; upon this a layer of oxy-phosphate of zinc should be placed to make a more firm foundation for the metal filling, which may be introduced at a subsequent sitting.

Reports of Societies.

INTERNATIONAL MEDICAL CONGRESS.*

Held at Washington, September, 1887.

SECTION OF DENTAL SURGERY.

JONATHAN TAFT, M.D., OF CINCINNATI, O., PRESIDENT.

Secretaries—A. M. DUDLEY, M.D., of Salem, Mass.;
F. H. REHWINKEL, M.D., of Chillicothe, O.

Monday, September 5th—First Day—Afternoon Session.

The PRESIDENT welcomed those present.

Drs. I. V. METNITZ, of Austria ; B. MCLEOD, of Scotland ; and GREVERTS, of Holland, replied in behalf of the countries they represented.

The PRESIDENT then delivered his address, in which he reviewed the progress of dentistry in the last fifty years, and concluded by saying that although the past record was an excellent one, yet the goal was not yet reached. He urged the profession, through those present, to work in all earnest for a yet higher standard.

Dr. R. J. PORRE, of Cincinnati, O., read a paper on

Chronic Pyæmia from Dental Origin.

The history of the case is as follows : The patient, male, good constitution and habits, suffered for the last thirty years from neuralgia, besides having constantly recurring furuncles and eruptions in various parts of the body, which would often for months become running abscesses. He experienced burning and itching eruptions of hands and feet, which would finally change into stubborn ulcerations. His bowels were either stubbornly constipated or exhaustingly loose. He suffered from frequent rigors and febrile attacks of varying intensity, profuse night-sweats, retention of urine, serious constriction of the bowels and urethra. Lancinating pains darted from the maxilla of right side to bowels, bladder, limbs, hands, and feet, or to whatever part that was locally affected at the time. This latter peculiarity, together with the discovery of a little pus exuding from the locality of the wisdom-tooth, led to a final correct diagnosis of his case.

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* We gratefully acknowledge that we are indebted for the following report of the proceedings of the IXth International Medical Congress to the public spirited enterprise and liberality of the Proprietors of the *Medical Record*, of New York.

The tooth referred to was extracted, and a speedy and complete recovery followed. As other sources leading to pyæmia and having their starting point in the oral cavity may be mentioned pyorrhœa alveolaris, alveolar abscess, abscess of the antrum, and dental caries.

The doctor related ten other cases similar to the above, which all yielded to the simple remedy of removing the offending tooth.

Dr. J. **Frank Lydston**, of Chicago, Ill., said that both physicians and dentists should appreciate the important relation which morbid conditions of the mouth and jaws, and especially those which may be produced by septic absorption, bear to different general conditions. Septic matter is quite generally found about the roots of the teeth, and may, under favouring circumstances, be absorbed into the blood. and there produce disturbances of greater or less degree.

The paper was further discussed by Drs. Walker, of London, England; Barrett, of Buffalo, N.Y.; W. J. Younger, of San. Francisco, Cal., and Chance, of Oregon.

Tuesday, September 6th—Second Day—Morning Session.

Dr. **William Carr**, N. Y., gave a *clinic* on the

Treatment of Fractures of the Maxillæ with a Modified Interdental Splint.

The majority of fractures of the inferior maxilla occur in the body rarely at the symphysis menti, but usually directly anterior or posterior to the mental foramen. A noticeable fact in connection with these fractures is that the victim rarely applies for treatment for several days succeeding the injury. He realizes that some of his teeth are loosened and also that he is painfully bruised, but does not seek surgical aid until he becomes alarmed by the increased inflammatory condition of the parts. There is but little difficulty in establishing a correct diagnosis, as usually the following symptoms are present—great pain in the effort to open and close the mouth, swelling. crepitus, inflammation, inability to masticate, and marked irregularity of the teeth.

Treatment.—It is identical with that of other fractures, namely, to bring the parts into apposition and retain them firmly until ossification is completed. For treatment of fractures of the maxillæ there is nothing superior to the interdental splint. When properly adjusted, speedy union may be secured without deformity of the jaw or irregularity of the teeth. Before taking the impression a careful examination of the parts should be made, Loose teeth and spicula of bone should be removed, and the parts should then be brought as nearly as possible to their normal position. An accurate impression should be made with impression-compound or wax. The material used should be as warm as the patient can bear it, in order to prevent unnecessary pain and also to prevent further displacement of the parts. The splint is made of vulcanite and covers all the teeth of the lower jaw, and all the teeth posterior to the canine in the upper jaw—leaving a space of about three or four lines through which the patient may receive nourishment. Small holes are drilled in the splint over the grinding surface of each molar for the purpose of ascertaining whether its adjustment is proper.

The splint should first be adjusted to the sound jaw, then gently bring the fractured jaw into position until it has passed about two-thirds of the length of the teeth—then with a quick firm motion bring the parts into position. Next apply a four-tailed bandage, which should be retained from three to five days; after this time, in the majority of cases, it may with safety be removed during the day, but should be replaced at night until the removal of the splint. The patient should be furnished with an ordinary rubber syringe, and instructed to keep the mouth thoroughly cleansed. For disinfectants I use peroxide of hydrogen three per cent. solution, or a solution of bisulphate of soda in the proportion of ʒj to ℥j, of water.

In ordinary cases the splint should be retained for three or four weeks, according to the physical condition of the patient—unless unforeseen complications should arise. The application of the splint, combined with thorough cleanliness, will usually be all the treatment required.

The advantages, besides those previously stated, are that the patient experiences but little pain and inconvenience, and can, as a rule, attend to his business almost immediately after the splint is applied.

It is not necessary that all the teeth, nor, indeed, that any should be present in the mouth in order to make this splint serve its purpose. In the first case the rubber can be made to take the place of the missing teeth, and in the latter case a perfect adaptation of the splint to the alveolar ridges can be secured, and will be found to keep the parts in perfect apposition.

Should it be deemed advisable to place a splint in position within an hour or two after seeing the case, one can be constructed entirely of ordinary gutta-percha, with just enough wire inside to stiffen it. Dr. Carr demonstrated this last method—it is very simple and can be made by any surgeon.

A number of gentlemen examined the principle and pronounced it very satisfactory in every way, the main points being its simplicity of construction, its effectiveness, and the ease with which it is adjusted and worn by the patient.

Dr. E. Brasseur, af Paris, France, read a paper on

The Use of Hot Air in Dental Therapeutics.

The reader urged that the ordinary means, such as bi-chloride and bin-iodide of mercury and carbolic-acid crystals, for destroying microbes in the oral cavity and, especially, in carious cavities of teeth, should be supplemented by the use of hot air.

Dr. C. A. Brackett, of Newport, R. I., discussed the paper at some length, laying considerable stress on the efficacy of crystallized carbolic acid as a germicide in carious cavities in teeth.

Other discussions followed, by Dr. James Truman and W. H. Morgan.

AFTERNOON SESSION.

Dr. Junius E. Cravens, of Indianapolis, Ind., read a paper on

The Management of Pulpless Teeth.

This system is based on the proposition that a pulpless tooth is not necessarily dead. The pulp being devitalized, the tooth still retains life through its pericementum. The usual course of treating pulpless teeth with escarotics and irritants causes irritation and final destruction of the pericementum, and the result is that the tooth, instead of being preserved, will act as a foreign body, and will be thrown off by nature through abscesses ; or, worse still, will lead to no end of nervous derangements.

The treatment suggested by the reader is to thoroughly cleanse the pulp-canal, and at once hermetically seal it with tin-foil.

The paper was discussed by Dr. Thomas Fillebrown, of Portland, Me. He did not agree with the essayist in the method outlined in the paper.

The doctor gave a short synopsis of the method he employs in treating pulpless teeth, which, by the manner in which it was received by the Section, seemed to be the one generally pursued.

Dr. A. W. **Harlan** of Chicago, Ill., followed, and likewise objected to the views expressed by the essayist. A dead pulp produces no irritation in the canal; the disease which it causes is beyond. If you could mechanically displace an odour—which the speaker denied—and should then fill the root-canal without any disinfection, disaster would inevitably follow unless there should be a fistulous outlet.

Dr. W. C. **Barrett**, of Buffalo, N.Y., in discussing the paper, stated whether viewed from the standpoint of pathology or etymology the paper is alike remarkable. That such a mass of absurdities could be presented at a meeting of the world's representatives in dentistry is to me astounding, and I protest against its acceptance as the standard by which to judge the intelligence of American dentists. Why the exploded dogmas of twenty-five years since should be gravely and in all sincerity presented at such a meeting as this is, I must confess, something for which I was not prepared. The assertion that a closed chamber in which exists the septic debris and the products of decomposition of a tooth-pulp should not be opened and evacuated, I can scarcely believe is made in calm earnest. The essayist has exhibited his complete ignorance of the progress of the past century.

Modern antiseptic pathology has taught us certain facts, and among these is the knowledge that the first step in the treatment of aseptic cavities is complete drainage; second, disinfection and the removal of all the products of disorganization; third, destruction of septic organisms; and finally, the complete sealing of the cavity against further infection. These comprise the essential steps in the treatment of septic root-canals. I will not insult the intelligence of those present by presuming to enlarge upon this and by going into the details of treatment, for this is not a body of tyros. But I do object to a consideration of the subject from the low standpoint of this extraordinary paper.

Dr. T. E. **Weeks**, of Minneapolis, Minn., read a paper on

Matrices as Adjuncts in Filling Teeth.

The essayist reviewed the different appliances for simplifying what would otherwise be very laborious operations. A perfect matrix should be simple in construction, cheap, easily adapted, and not too stiff, so that when applied it will yield just enough to allow sufficient gold to pass beyond the walls of the cavity for a good finish.

Dr. F. H. **Guilford**, of Philadelphia, Pa., in a few brief remarks, endorsed the sentiment expressed in the paper.

Third Day, Wednesday, September 7th——Morning Session.

Dr. **Pradere**, of Lyons, France, read a paper on the

Phthisis Cured by the Continuous Application of Medicine to the Palate.

Immediately after the paper was read, Dr. **James Trueman**, of Philadelphia, Pa., moved that it should *not be accepted by the Section*, but should be referred, without discussion, to Section I, in General Medicine;

also embodying that the Executive Committee be censured for allowing such a paper to come before the Section. The motion was seconded by **Frank Abbott**, M.D., of New York, but the Chair ruled that, inasmuch as the Executive Committee had seen fit to admit this paper, it would be out of order to put the motion to the house. Dr. Trueman dissented from the decision of the chair and renewed his motion. The question being then called, it was voted to refer the paper to Section I.

Clinic.

A number of gentlemen gave clinics in the treatment of diseased conditions of the oral cavities, and others demonstrated their methods of filling teeth and constructing artificial dentures for patients. These clinics are spoken of as the most successful features in this Section, and it is but just to say that a good deal of credit is due to Dr. C. F. W. **Boedecker**, of New York, for the result.

Dr. **Metnitz**, of Vienna, Austria, read a paper on

Osteomyelitis.

The main feature of the paper was the report of two cases from practice.

The history of the first case was as follows :—In October, 1886, a lady, aged forty-three, had two teeth extracted. A few days later she suffered with chills, which were followed by slight mental disturbances. The seventh day the patient became unconscious, in which condition she was brought to the hospital. Examination revealed that there was a large swelling over the left cheek, extending to the temporal region ; the skin covering this swelling was tense and pale in color; the sclerotic was highly colored (yellow), and the skin showed a yellow tinge ; the pupils were without reaction. The odour of the breath gave evidence of necrosis. The submaxillary glands were very much enlarged, and the neighbouring tissues infiltrated. There was unconscious urination and defecation. Death occurred the following day. The postmortem examination showed the membranes of the brain to be thickened and traversed by numerous vessels. The left hemisphere was covered by a layer of pus, and the right hemisphere showed considerable quantity of pus along the track of the vessels as well as several pus-depots. The brain-substance was quite soft. The examination of the oral cavity disclosed that of the two teeth extracted the upper alveolus had almost entirely filled up with healthy granulations, whereas the lower was filled with pus. The mucous membrane in the region of this diseased alveolus was very much discolored and could be easily removed in pieces. The probe discovered nothing but dead bone. All the muscles of the neck which are attached to the left side of the lower jaw were infiltrated with pus. The periosteum was separated from the left side of body and ramus of the jaw. The alveolus of the extracted wisdom-tooth communicated by two good-sized openings with the medullary cavity, and the medullary itself was discoloured and infiltrated with pus. The cause of this extensive destructive action is no doubt to be looked for in the unclean condition of the alveolus after the extraction. Sections of the jaw show that the medullary canal was very much enlarged.

Kocher, Rosenbach, and Busch, in experimenting on animals, have found that it impossible to produce an acute pus-forming osteomyelitis either through traumatic injury or chemical and mechanical irritation, but that such a condition can readily be brought about by infecting the fresh wound in the bone by any decaying substance.

The second case was one of multiple osteomyelitis. The patient, a male, aged seventeen suffered from an attack of osteomyelitis of the humerus, the ulna, and the lower jaw. According to Billroth, it is not settled whether this condition (multiple osteomyelitis) is due to septic influences acting on various places at the same time, or whether the infection starts from one point.

Death in this case, as in the first, was directly due to acute suppurative meningitis. When we have to deal with simple inflammation, energetic antiseptic treatment will prove quite sufficient. In severer cases of osteomyelitis Billroth advises that the seat of the disease be reached as soon as possible—the pus evacuated, the cavity thoroughly disinfected, and dressed with antiseptic dressing. Many cases present no actual depots of pus, or abscesses, but simply an infiltration of the medulla. In such cases Billroth holds it of little value to open into the medullary canal. Neither does he advocate disarticulation or resection, because, in the first place, the exact extent of the disease cannot be foretold, and secondly, the medullary substance of a patient suffering from osteomyelitis is in such a susceptible condition that a new injury would almost certainly prove fatal.

This paper was read by the essayist in German. No discussion followed.

Dr. **Jenison**, of Minneapolis, Minn., read a paper on

Art in Dentistry.

The essayist advocated the restoration in gold of all teeth that had been destroyed by caries, thereby improving both their usefulness and beauty.

In constructing artificial dentures more time should be given to the restoration of the features of the patient, and for that purpose single and not section teeth should be used.

Dr. **John Allen**, of New York discussed the paper, taking up the main points to be observed in constructing an artificial denture. He closed his remarks by saying that inasmuch as the countenance reveals the thoughts of a person, great care should be exercised in restoring lost features.

THIRD DAY—AFTERNOON SESSION.

Dr. R. R. **Andrews**, of Cambridge, Mass., read a paper on

The Origin of the Dental Fibril, illustrated by Aid of the Stereopticon.

Dr. Andrews describes his process of preparing and mounting the specimens for the microscope, which differed in no essential respect from the latest methods employed by others for that purpose.

In speaking of the formation of the fibrils, the essayist says there are two kinds of odontoblasts—those which are square toward the dentine, and others, just by the sides of the first mentioned, which are pear-shaped. From these latter, and not from the first (or square end ones), originate the dental fibril.

The stereopticon views presented by the doctor showed very clearly with what patience, earnestness, and intelligence the essayist worked to establish his view of the question. And the hearty appreciation accorded him by the Section was well merited.

Dr. **Frank Abbott**, of New York, in opening the discussion, paid a high tribute to the reader of the paper for the hard work done in behalf of his speciality. In order to understand the process by which the dental fibril is produced, it is necessary for us to consider the matter from the third to the fifth month of intra-uterine life, at which period of the existence of the fœtus the papilla of teeth are so far developed that a material change is observed to be taking place. The papilla is a mass of myxomatous tissue, liberally supplied with medullary elements. In some instances, at three months, at others as late as the fifth of intra-uterine life, a coalescing of several of the medullary corpuscles into one may be observed upon the periphery of the papilla adjacent to the enamel organ, which at this period may be observed forming a cap upon the papilla. The united medullary corpuscles are known as odontoblasts. The impression has generally prevailed among histologists and embryologists, that the odontoblasts were directly formed into dentine. This theory, through recent researches, has been proven to be incorrect. The odontoblasts, when viewed with a power of 1,200, show a delicate reticulum, which unites the nuclei with the walls of each corpuscle and with each other. This reticulum, as well as the walls of the odontoblasts, are the living matter which remains as the living portion of the dentine. Before the beginning of the deposition of lime salts, the odontoblasts are reconverted into medullary substance. As such they receive the calcareous basis-substance, and thus a certain territory of the papilla becomes dentine. While this process of calcification is going on, another row of odontoblasts makes its appearance, from the sides and ends of which prolongations of the living matter may be seen running into the canaliculi of the dentine already formed. A spindle-or-pear-shaped odontoblast gives off one, while those with broad ends give off two, three, and even five, prolongations. If the views advanced in the paper were correct, it would necessarily follow that territories of considerable size would be left in the dentine with no canaliculi whatever ; nor is there any provision for furnishing these territories with any living tissue.

Dr. FLETCHER, of Cincinnati, O., read a paper on

Protective Dentine ; Illustrated by the Stereopticon.

This paper was listened to with great interest by the Section. The slides which were shown on the screen showed the different kinds of protective dentine, and the essayist gave his views of how these different efforts on the part of nature to protect herself are brought about.

Dr. W. X. SUTTUTH, of Philadelphia, agreed with the essayist in the practical conclusions drawn ; he supplemented the reader's remarks by stating that the odontoblasts remain after the development of the dentine, but can be stimulated to produce or perform their function of forming protective dentine.

Dr. W, H. ATKINSON, of New York, complimented the gentlemen on producing such well-digested papers.

DR. J. HOWARD MUMMERY, of London, England, exhibited

Photo-Micrographs of all the Structures of the Tooth,

and explained the best method of producing them.

(To be Continued).

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, JUNE 6TH, 1887.

CHAS. S. TOMES, PRESIDENT, IN THE CHAIR.

THE Minutes of the previous meeting having been read and confirmed,

Mr. W. B. Paterson signed the Obligation Book, and was formally admitted to membership by the President.

Dr. Dudley W. Buxton and Mr. J. Bland Sutton, F.R.C.S., were then ballotted for and elected Honorary Members of the Society, and Mr. J. Trude Fripp, L.D.S. Ed. & I., of Willesden, and also elected a Resident Member.

The Librarian (Mr. Weiss) called attention to a copy of Crowley's Dental Bibliography, on the margin of which were marked the case numbers of those books which were to be found in the Society's Library, thus showing at a glance those which it did and those which it did not possess. Hitherto, in order to be sure that a book was not in the Library, it had been necessary to search first the Catalogue and then the Appendix. This little book would therefore, he thought, save a good deal of trouble.

The Curator (Mr. Storer Bennett) said he had received several additions to the Museum since the last meeting. Mr. A. B. Alexander had sent some models of cleft palate cases, and Mr. Rogers, of Cheltenham, a fine disarticulated skeleton of a badger. He had also received a number of fossil teeth of sharks, elephants, deer, &c., from Mr. R. J. Larking. A large portion had been found between Charleston (U.S.A.) and the Bull River ; the rest had been discovered near Mons, in Belgium. He had hoped that Mr. Larking would be able to write a paper on the subject for the Society, but he was about to sail for Australia, so had merely handed over the collection, which was a very fine one, for the Society's acceptance.

Mr. Henri Weiss showed the crown of a right lower first bicuspid, the loss of which had been consequent on inflammation spreading from an alveolar abscess attached to the first deciduous molar, the formative tooth pulp having been destroyed, and the cap of the growing tooth exfoliated.

The history of the case was briefly as follows :—The patient, a little girl, four years of age, was brought to him at the National Dental Hospital with a history of several attacks of swelled face. On examination there was seen on the surface of the gum what at first sight looked like a piece of bone —a portion of the alveolar process, or a portion of the root of the first temporary molar. But on closer examination it proved to be the crown of the first bicuspid, lying in a crypt of the gum and barely attached. Feeling assured that it was necrosed and quite useless, Mr. Weiss removed it and left the carious deciduous tooth in the hope that it might still render some service in the process of mastication.

Whether or no any trace of tooth pulp had been left which would continue to build up a deformed kind of tooth, must be left as a matter of speculation.

The point for consideration in a case of that kind, was, what action should be taken when an alveolar abscess occurs at a period coincident with the active development of the crowns of the permanent teeth? The great advantage of retaining the temporary teeth until their successors were ready to take their place was known to all. It only remained to determine whether any period could be laid down within which it would be justifiable to extract any given temporary tooth, so as to preclude as far as possible any interference with the perfect development of its successor.

Mr. Ackery remarked that cases like that which Mr. Henri Weiss had mentioned were by no means uncommon. He had quite recently had a child brought to him with the roots of a first temporary molar and the necrosed crown of the corresponding bicuspid both lying on the surface of the gum ; he removed them together.

Mr. Storer Bennett showed a curious specimen of abnormal tooth development in a jaw of the Stone Age, one of those which had been exhibited to the Society some months previously by Mr. Cunningham. It was the lower jaw of a child, on careful examination of which he found one of the second bicuspids, partially formed, in an inverted position, with its cusps downwards and its root upwards between those of the second temporary molar.

The President remarked that the specimen was specially interesting as showing that dental irregularities were not things of to-day.

Mr. Willoughby Weiss showed, for Mr. J. B. Bridgman, of Norwich, models of a case of irregularity in a girl, aged eighteen, one of the worst he had ever met with. The peculiarity of the case was that the upper centrals were almost directly in front of the laterals, and also outside the arch. Mr. Bridgman was anxious to obtain the opinion of members as to the mode of treatment most likely to effect a speedy improvement, the patient being in humble circumstances. The prevailing opinion seemed to be that the centrals should be extracted.

Mr. Boyd Wallis showed a very handy little instrument for removing cotton dressings, designed by Mr. Butler Smythe, of Brook Street.

Mr. S. J. Hutchinson exhibited the Welsbach Incandescent Light, consisting of a small Bunsen burner over which is placed a cap made of cotton impregnated with some mineral salts. It gave a very brilliant white light with very little heat.

The President then called upon Prof. Victor Horsley, F.R.S., to read the paper of the evening on "The Pathology of Inveterate Neuralgia of the Fifth Nerve." See page 964.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRAITIN.

Owing to the alterations which are being made in the rooms of the Odontological Society, the next meeting will take place at the *Beethoven Rooms* 27, Harley Street, W., on Monday, November 7th, at 8 p.m. Business : Casual communications by Mr. Storer Bennett on "an extraordinary example of tooth development." Dr. St.George Elliott on "a peculiar case of arrested development," and Mr. F. Henri Weiss on "a case of retarded eruption. The adjourned discussion on Dr. Geo. Cunningham and Mr. W. Hern's papers on "Cocaine" will also be taken, and a paper will be read by Mr. J. Bland Sutton on "Odontomes."

Correspondence.

DENTAL ADVERTISING.

To the Editor of the "British Journal of Dental Science."

Dear Sir,—Your correspondent, "Molar," candidly acknowleges that he is ashamed of his advertisements. For a man to publish things to his own shame for the sake of profit brings him to a level with a class who are not generally admitted into decent society, and he stands confessed as unfit for a respectable position.

Advertising in one form or another is practised by every professional man who has a reputation to make, and it is simply a question of how the advertising is done as to whether he is considered fit for respectable society or not. A good man who is unknown gets himself on the honorary staff of some hospital, not because he desires to work for nothing, but to become known, i.e., he advertises respectably. He puts his name and profession on his front door plate, thereby putting out an advertisement of the plainest possible kind in the public street, and thereby he also advertises in a respectable manner. Again, he removes to next door or over the way and sends a quiet neat card to those who know him and he is still respectable; he sends the same card in an envelope by post to all those who do not know him, and becomes doubtful. He gets a dozen men to stand at the street corners and hand the same cards to passers by, and becomes a sinner beyond redemption. It is not advertising *per se*, which is objectionable, everyone who puts his name and profession on his door advertises in the most public manner, it is purely a question of how the advertising is done, and there are certain strict bounds which no one will pass who wishes to be well thought of by his equals. When a man issues advertisements which either he or his professional equals would be ashamed of he puts himself beyond the pale of decent society.

The bounds which restrict advertising vary from time to time. I can remember when one of our finest operators issued handbills in the streets calling attention to his gold fillings, and this gentleman always had a high reputation and was admitted into the best society during the whole time his handbills were being circulated. No doubt many who read this, who remember the old times, will be personally acquainted with other cases of a similar character. Your correspondent, if he has anything in him can make himself known and retain his practice with a steady increase without issuing advertisements of which he is ashamed, and the sooner he begins, the better it will be for his own reputation, and for the profession in general. I am Sir, yours, &c.,

THOS. FLETCHER.

To the Editor of the " British Journal of Dental Science.

Sir,—In looking over my Journal, October 1st, I find that you, in a leader upon Sir John Tomes resignation at Glasgow, give us a good idea of what Sir John and men of his stamp have done for our profession, we all acknowledge this, but at the same time you go on to say that "we deplore, and justly, that the whole profession has not united to stamp out from its midst the many derogative practices which charlatans and persons of notoriously dishonest character have dealt in, and thus by their dodges and advertisements, or other mendacious means, have brought dentistry into disrepute," &c., &c. Now this is exactly what is required, viz.: that the whole profession should unite to stamp out this disgraceful practice of advertising and quackery; and it is to those of great standing in our profession that we look, to start some movement, whereby this important end would be reached. You will allow me to plainly disagree with the latter portion of your leader wherein you say—" Even those among us who advertise to 'protect ourselves' " are *entirely* disreputable, because one may legitimately advertise with the intention of dealing honorably with those who patronise them (as I do), but *others* advertise and catch their victim, get their *money* and then do not care whether they have done justice to a patient or not, there is a difference in the two who advertise and a great one, let us look at this in another light, viz.: A man is married, with a family, and is under the expense of £600 a year, he spends £200 a year upon advertising and so makes his turnover £1,400 per year, well, there is then a margin upon the right side of profit, and none of us can entirely do without making a profit upon a years' income, but suppose that he has *three* competitors who also advertise, and who are doing a large turnover, and he who spends this £600 and £200, suddenly desists from advertising what is the consequence? At the year's end he will find himself ever so much out of pocket, because those who still continue to advertise in the same town reap the benefit that he would otherwise derive, therefore, one must still against one's will advertise, or allow oneself to be thrown entirely out of practice, unless one has a large private income to equalise one's loss, because a man who has been a dentist since he left school, presuming it is fifteen years ago (as in my case) is not fit or qualified for anything but dentistry. There are hundreds of such cases as I have quoted. Again you say in your leader that the educated always have it in their power to surpass the uneducated in any pursuit providing they have knowledge and skill. I don't think so, if the ignorant man, with money, be allowed to advertise, the skilful man not being an advertiser, in twenty cases out of twenty-two the ignoramus will make position and money, where the skilful man would starve, because I consider that there are more simple people who would be caught by flash advertising than sensible people who would not be caught on that account.

I am sorry if I have trespassed upon your space, but at the same time I sincerely hope that there are yet some among our leading practitioners who will sift the matter, and try to the best of their ability to improve this shocking state of things. Unity is strength, and let me ask a goodly number of us to unite and see what can be done. I am Sir, &c.,

" MOLAR."

British Journal of Dental Science.

No. 475. LONDON, NOV. 1, 1887. Vol. XXX.

LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Professor of Surgery and Pathology.

LECTURE III.—Diseases of the Temporo-Maxillary Articulation and Closure of the Jaws.

(*Continued from page* 959).

In the 34th volume of the *Pathological Society's Transactions* will be found the record of a remarkable specimen of hypertrophy of the neck and condyle of the jaw, removed by myself from a woman, aged 36, whose face had for ten years

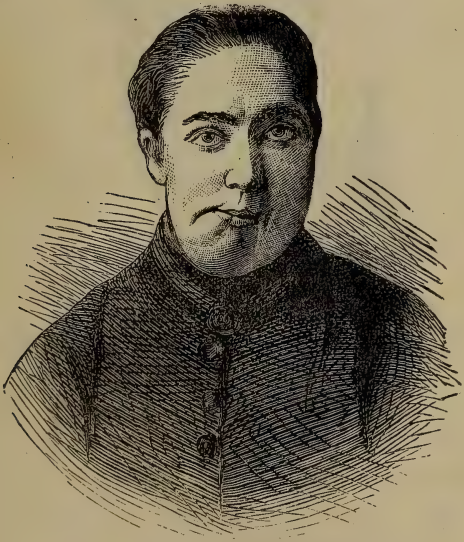

Fig 51.

become gradually more deformed, by the increasing displacement of the chin to the right side and the projection outwards of the left condyloid process. The movements of the jaw were restricted, and the length of the left ascending ramus was three inches, that of the right one inch and a-half. She had an attack of hemiplegia, implicating the left side of the face, when she was 25 years of age, and from this affection her limbs had covered perfectly and her face partially.

The appearance of the patient (who was sent to me by Dr. Williams, of Sherborne) is seen in Fig. 51, and the piece of bone removed is accurately shown in the drawing (Fig. 52), the hypertrophied condyle measuring one inch and three-quarters from before backwards, and one inch across, and being covered with fibro-cartilage. A section of the preparation shows it to be composed of cancellous bone with large rounded spaces, and its walls are formed of a thin layer of compact bone. The fissure observed in Mr. McCarthy's case does not exist in this specimen. If the condyle thus shown is compared with Fig. 50, which represents the condyle of

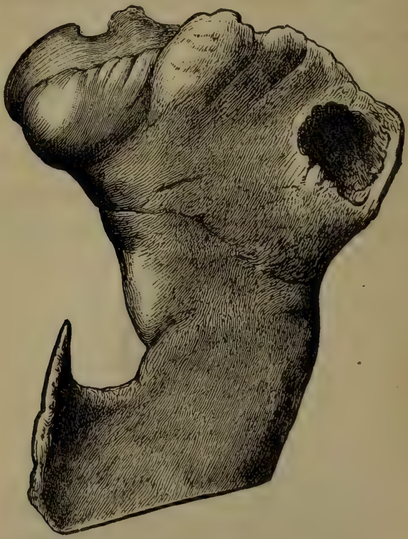

Fig 52.

Mr. McCarthy's case, of the natural size, there can be little doubt that my preparation, Mr. McCarthy's and Dr. Adams's all belong to the same category; and yet in Mr. McCarthy's probably, and certainly in my own case, this was the only joint affected. It must be concluded, then, I think, that hypertrophy of the neck and condyle may occur in otherwise healthy patients, and I believe that I saw, in consultation with Mr. Nathaniel Stevenson, the early stage of this curious condition in a young healthy lady, aged about 20, in whom the lower teeth had gradually become displaced from no known cause, so as to disarrange the normal bite. I here detected, what was then new to me, some hypertrophy of the neck of the jaw on one side, and recommended blistering and a course of iodide of potassium without any marked benefit, except that the deformity has not increased. In the patient whose portrait is given in Fig. 51, the deformity was so great as to warrant surgical interference, and the result has been very satisfactory, the face being brought straight and the patient having free movement of the jaw.

The treatment of inflammation of the temporo-maxillary joint has hitherto been, in chronic cases, the application of blisters and the use of a bandage—particularly an elastic bandage at night. Dr. Goodwillie, of New York, has, however, contrived an ingenious method of fixing the lower jaw effectually in cases of arthritis, which will be best described in his own words (*Archives of Medicine*, New York, June, 1881):

"The method that I employ is as follows:—In this case the patient is under the anæsthetic effect of morphine and nitrous oxide. If there is any rigidity of the muscles, cautiously force open the mouth and take an impression of either the upper or lower teeth, and a rubber splint is made from the cast to cover over all the teeth in one jaw. Upon the posterior part of this splint is made a prominence or fulcrum (*D*), so that when the mouth is closed the most posterior teeth close upon it, while all the anterior teeth are left free. The next step is to take a plaster-of-Paris impression of the chin, and from this make a splint (*A*). On each end of the plint is made a place for fastening elastic straps (*B*) that pass up on each side of the head to a close-fitting skull-cap (*C*). (See Fig. 53.)

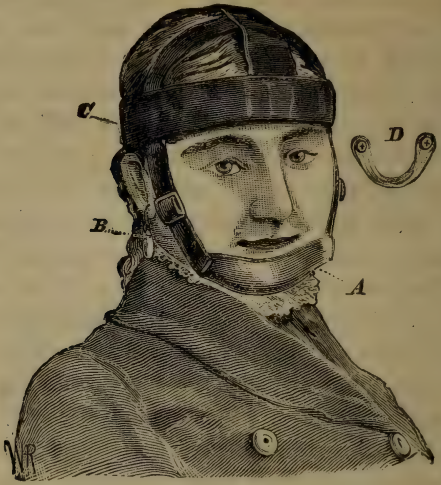

Fig. 53.

"When the apparatus is in place and the elastic straps tightened so as to lift the chin, then pressure is brought to bear on the fulcrum at the posterior molar tooth, and so by this means extension is made at the joints, and the inflamed surfaces within the joints are relieved from pressure; then immediate relief is experienced."

I have no experience of this method, but it appears to be based upon sound surgical principles, and the cases illustrative of its use given by Dr. Goodwillie attest its usefulness.

In the cases of fibrous ankylosis resulting from the cure of arthritis, it is open to the surgeon to have recourse to mechanical means to break down the adhesions; and to illustrate the difficulties to be overcome, I may refer to another case of Dr. Goodwillie's (*New York Medical Journal*, July, 1875):—The patient was a girl, aged 10, who, five years before, had fallen over the bannisters, breaking and dislocating the jaw, with the result of the jaws being firmly closed. The apparatus employed is seen in Fig. 54.

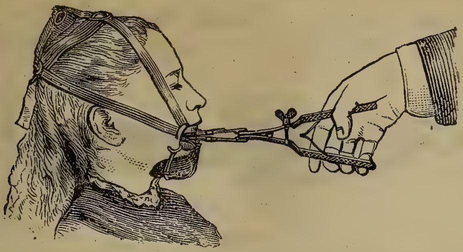

Fig. 54.

One of the chief sources of interruption in treatment is periodontitis from the great amount of force used on the teeth. To prevent this, Dr. Goodwillie protects them with an interdental splint of hard rubber. These splints at first are necessarily very small, and confined to the front teeth; but, as the case progresses, longer and more perfect ones are made. In this case the rubber splints were enclosed in metal splints made of German silver, as this metal is tough and unyielding. These splints were made fast to the teeth by straps that passed from strong wire arms at the sides to a skull-cap, and the lower one was strapped to a pad on the chin. This pad was also attached to the lower splint by means of a ratchet and spring.

From the point of each splint an arm, three-fourths of an inch broad, extends out one inch and a quarter, and to these is clasped the oral speculum when in use (Fig. 55). The inclined planes of the speculum pass in between these arms, and they are held by clasps. The inclined planes are attached by moveable joints to a distending forceps, so that when the handles are approximated, the inclined planes are separated at their attached ends. Each handle is made in two sections, and the spring that separates the handle is enclosed between them to protect them from injury.

In forcing the speculum between the splints, the instrument is grasped by one of the handles, and when in place both handles are approximated. If more force is desired, or the mouth is to be held open at any point, the screw at the handle may be used.

In stretching the masseter and temporal muscles, Dr. Goodwillie uses an oral speculum, devised by him some years ago (Fig. 55). It consists of a shaft, to the flat end of which are attached two wings or inclined planes, upon which the teeth rest. The other end of the shaft has a thread cut on it, and a screw, this passes through an handle, one end of which is wedge-shaped. By turning the screw on the other end of the handle, the inclined planes diverge or converge.

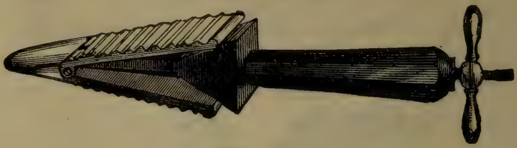

Fig. 55.

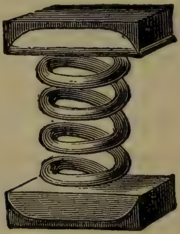

Fig. 56.

Fig. 56 represents a spiral-spring speculum for the patients to employ by placing it between the teeth and biting upon it. Longer springs are used as the mouth gradually opens.

It need hardly be said that treatment by this method would extend over many months, and would severely try the endurance of both patient and surgeon. A simpler method is the division of adhesions formed between the condyle and glenoid cavity, as practised by Mr. Spanton in the cases already referred to, in both of which, as I learn from that gentleman, a good result ensued.

The first was a girl, aged 10, Ada M. R., who was admitted into the North Staffordshire Infirmary in April, 1880. About six years before she had scarlet fever, which resulted in hip-joint disease, and in a subsequent closure of the mouth, which had never been relieved. On admission she was very thin and ill-nourished, owing to her inability to masticate food. The mouth was firmly closed, and under chloroform it was found impossible to open it, although one tooth was broken in the attempt. There were no marks of cicatrices either in the mouth or externally ; the digastric muscles were fully developed, and there was no unusual rigidity of the masseter or temporal muscles, nor was there any glandular swelling or other apparent cause for the condition of the mouth. The right hip was dislocated from disease of the joint, coincident apparently with the temporo-maxillary affection, but in a perfectly quiet state. She was able to take only liquid food, or such as she could squeeze with her fingers between the teeth.

Believing that the immobility was dependent on an ankylosed state of the temporo-maxillary joints, with probable contraction of the ligaments surrounding them, and failing to make the slightest impression by means of a gag with any justifiable amount of force, Mr. Spanton passed a very narrow tenotomy knife into the temporo-maxillary joint on each side, immediately in front of the temporal artery, and then passed it freely round the condyle of the inferior maxilla as far as he deemed prudent, dividing completely the external lateral ligament of the joint, and partially the insertion of the external pterygoid muscle, keeping the back of the knife towards the temporal, and carefully measuring the depth of the incision so as to avoid the middle meningeal artery. Very little hæmorrhage occurred; and as soon as this procedure was effected, Mr. Spanton found that the joints yielded at once to the gag, and that the mouth could be opened to the extent of more than an inch. For a day or two some soreness was complained of, but the gag was used almost daily, and seven weeks afterwards the patient left the Infirmary able to open the mouth fairly well and to masticate her food. As the result of this her general health greatly improved. She continued well, and she was able to go to school, but the use of the gag was from time to time neglected, and by degrees the stiffness began to return. At the end of November she came under Mr. Spanton's care again, very much improved in health, but with the mouth closed so far as only to admit of the tip of one's finger. He accordingly repeated the operation, taking care to divide the structures, especially anteriorly, more freely than on the former occasion; and the result has been much more marked than it was before. She can now open the mouth to some extent without assistance, and with the use of force it can be opened wide without causing pain. There is, however, very slight lateral movement.

The second case is that of a girl, aged 9, Sarah Ann B., who was brought to Mr. Spanton in November, 1879, for a closed mouth. She was a delicate-looking child had been deaf from early childhood, and about two years and a half before had scarlet fever, after which the gradual closure of the jaws took place. This was naturally accompanied by a corresponding decline in her health and strength, for which her friends sought relief. The mouth was quite firmly closed, and with no legitimate amount of force could it be moved. Under chloroform Mr. Spanton operated as in the former case, and by means of a screw-gag opened the mouth freely. No untoward symptoms beyond some swelling and tenderness about the temporo-maxillary joints occurred, and by the frequent use of the gag by the patient's friends at home, she can now open her mouth sufficiently to take any kind of food, and is recovering very fair lateral movement also. She can open it to the extent of more than half an inch without assistance, and is able to masticate her food thoroughly. This has led, as it was hoped it would, to a corresponding improvement in her general health.

In cases of fibrous ankylosis there is the possibilty of removing the condyle, as has been done by Mr. Davies-Colley, and probably by others; or, as proposed by Dr. Ewing Mears (*American Journal of Medical Science*, October, 1883), of dividing the ramus of the jaw, and excising through the mouth, the condyle with the coronoid process and sigmoid notch.

The method of operation is as follows; a straight sharp-pointed bistoury is introduced beneath the masseter muscle on a level with the last molar tooth of the lower jaw. Into the wound thus made the blade of a Adams' saw is passed, and the ramus sawn through. The periosteum, with the overlying masseter muscle, is raised by the periosteal elevator, and the wound thus enlarged. The insertion of the temporal muscle is now divided by a probe-pointed bistoury. The tissues on the inner surface are separated by the elevator, the bone seized by the lion-jawed forceps, and an effort made to dislodge it by forcibly twisting it outwards. If it yields at the neck of the condyle, the process is afterwards chiselled out. If sufficient space is acquired without removal of the firmly ankylosed process, it is permitted to remain, the object being to provide ample space for the formation of an artificial joint. Section of the masseter muscle is made, if its tense condition demands it. Hæmorrhage, which arises from the division of muscular arterial branches and possibly of the inferior dental artery, is controlled by pressure effected by packing the wound cavity with sponges. Wounding of the internal maxillary artery is to be avoided by careful use of the instrument in close contact with the bone in the upper and inner portions.

A case of the removal of both condyles for fibrous ankylosis is quoted by the *Wiener Med. Wochenschrift*, of July 6th, 1872, from the proceedings of the Royal Academy of Medicine in Bologna. It occurred in the practice of Dr. Bottini. The patient was a lad, aged 17, who, at the age of seven, had fallen on the jaw, and had gradually lost the power of opening his mouth, so that at last, for some months, he was unable to separate the jaws to any extent. Dr. Bottin introduced wedges, but these were very irksome to the patient and were removed. Resection of the articular head of the bone was then performed on one side; this had no noticeable result, but on the operation being repeated on the other side, the jaw could be moved freely. At the end of six weeks the wound had healed, and the motion of the jaw was normal. The only morbid change that could be discovered was the absence of the inter-articular fibro-cartilage.

In cases of rheumatoid arthritis in which the suffering is great, excision of the condyle seems to offer the best means of giving relief. The first removal of the condyle was by Professor Humphry, of Cambridge (*Med. Association Journal*, 1856), and was undertaken for chronic rheumatic arthritis. He exposed the condyle by a curved incision from the side of the orbit across the zygoma to the ear, passing a little above the temporo-maxillary articulation, and a second incision from the termination of the first directly upwards in front of the ear across the zygoma again, avoiding the temporal artery. The flap thus made was reflected, and the neck of the condyle cut through with a narrow saw.

In cases of complete fixation, resection of the condyle appears to offer one of the best and safest methods of treatment. In 1874 Dr. Gross, of Philadelphia, resected the condyle with a portion of the neck of the jaw in a girl aged seven, but does not mention the method he pursued. Mr. Croft has lent me the photographs of a child in whom he resected the condyle on both sides consecutively, with very good results; and I am indebted to Mr. Davy, of the Westminster Hospital, for the loan of three condyles two of which he removed from living patients with the best results. Mr. Davy's first case was in a woman aged fifty, who had complete closure of the jaws, and from whom the left condyle was removed in October, 1878. She made a rapid recovery, with perfect mastication, but died from the bursting of an aortic aneurysm on December 8th, and the remainder of the jaw was then obtained. Mr. Davy's second case was in a man aged forty-seven, who recovered perfect use of the jaw. The third specimen is a *post-mortem* one, and illustrates the changes due to chronic rheumatic arthritis already described.

In 1883 I exposed the ankylosed joint in a boy aged seven by an incision in front of the ear, and with a chisel divided the neck of the bone, and removed half an inch of bone in the situation of the condyle, with very good results as regards movement, and with no obvious damage to the facial nerve.

A case of complete synostosis of the jaw was successfully treated by a different method by Dr. James Little, of New York, in 1873. The patient was aged nineteen, and had some years before suffered from suppuration of the temporo-maxillary articulation, leading to ankylosis. Dr. Little made an incision along the lower border of the jaw, and turned up the masseter, when the neck of the condyle was seen to be very much enlarged, and continuous with the temporal bone.

A trephine, half an inch in diameter, was then applied, and a button of bone three-eighths of an inch in thickness was removed. The portion of bone on each side of the opening was then cut through with a chisel, and the neck of the condyle cut away piece by piece, so as to leave no portion projecting from the temporal bone. The result was quite satisfactory.

A similar operation, but performed by a different method, was successfully undertaken by Dr. Robert Abbe, of New York, in a boy aged ten, who had suffered from otitis media and suppuration of the joint some years before. A vertical incision was made in front of the ear, and a horizontal one meeting its upper end was carried along the lower border of the zygoma. The parotid, with the facial nerve, was drawn down, and with a periosteal elevator the posterior fibres of the masseter were cleared away, and the articulation exposed. A narrow osteotomy chisel was now applied to the neck of the condyle, and carefully driven half through the bone, and by forcibly opening the mouth the bone was broken through. The neck of the condyle was then removed piecemeal, but the condyle was left *in situ*. The result was satisfactory.

Sédillot mentions that in a case of true ankylosis of the temporo-maxillary articulation, M. Grube, in 1863, carried a straight chisel through the mouth to the neck of the jaw, which broke by hammering. Some months later, he divided the masseter subcutaneously, and the cure, by the formation of a false joint, was permanent. In 1879 I performed the same operation in a child aged six, but the results were unsatisfactory. Suppuration was set up, and required an external opening, and the movement, which was free at first, became as limited as before the operation, and I subsequently excised the condyle. It would appear, therefore, that mere division of the neck of the bone does not offer such good prospect of a permanent false joint as removal of the neck or the condyle, though these operations are necessarily more severe.

Esmarch's operation of removing a wedge in front of the masseter is as applicable to cases of ankylosis from disease of the joint as to cases of cicatrix, and Fischer (*Archiv. für Klin. Chirurgie*, Bd. xiii., Hft. 3) appears to have performed the operation on both sides of the jaw, in a case of bilateral ankylosis of the temporo-maxillary articulation, with very good result, the patient obtaining complete and useful control over the central movable portion of the jaw.

I have recently performed an operation which appears to me to possess equal advantages over other proceedings undertaken for ankylosis of the temporo-maxillary articulation, and which consists in the division of the ramus of the lower jaw beneath the masseter by a saw introduced from the mouth The patient was a young gentleman aged sixteen, who came under my care in 1886 with complete closure of the jaws due to ankylosis of the left temporo-maxillary articulation. He had scarlet fever in 1881, and the disease followed upon this. In 1882, and twice in 1883, attempts were made to screw the mouth open, with only partial and very temporary success; and when I saw him, the application of the powerful screw-gag I show produced no effect. In December last I made a small incision within the mouth immediately above the last molar tooth, and having passed a steel director to clear the way, I was able to push an Adams saw beneath the masseter and to divide the ramus horizontally. No hæmorrhage occurred from the inferior dental artery, though the accompanying nerve was subsequently found to have been damaged.

The patient was able to open his mouth as soon as he recovered from the chloroform, and made a rapid recovery. Unfortunately, he caught cold on the railway journey home, and an abscess formed and pointed behind the jaw, but has left only a dimple. The patient can now open his mouth, so that there are nine-sixteenths of an inch between the incisor teeth, and his condition is a most satisfactory one.

(*To be continued.*)

NOTES ON THE PATHOLOGY OF INVETERATE NEURALGIA OF THE FIFTH NERVE.

Illustrated by cases treated successfully by Avulsion of the Nerve close to the Skull.

By Victor A. H. Horsley, M.B., F.R.S., F.R.C.S.,
Assistant Surgeon to the University College Hospital, Surgeon to the National Hospital for the Paralysed and Epileptic, &c.

(*Concluded from page* 968.)

Next as to common sensation. It is of course true that in an ordinary case of toothache the pain may radiate, not only from the part affected, but may effect all the branches of the fifth nerve, thus reflexly producing hyperæsthesia. Now if the disease is in the trunk of the nerve you may find the skin hyperæsthetic at one place and anæsthetic at another. Is this condition of real objective anæsthesia known to you as occurring reflexly from dental irritation ?

There is another very important variety of hyperæsthesia, which, so far I am aware, is only met with when the disease is in the trunk of the nerve, viz., when gently touching the skin causes extreme pain, whilst if you press firmly it causes no pain at all. This is a very striking form of hyperæsthesia, and one that is well known, but has never been explained.

I say nothing here with regard to the pain, the whole malady in the patient's view of the case, as I shall speak specially of it directly.

As the result of disease of the teeth we may have hyperæsthesia in varying degrees, and in this connection I would ask for information whether in those cases in which the pain is distinctly removed by the extraction of a tooth and then observed to recur in the next, whether there is any difference in the patient's feelings ? is the pain of the second tooth an exact repetition of that of the first, beginning in the same way and going through the same course ? Because in that case *à priori* it would be probable that you were dealing with a case of local affection, and perhaps it would then be good policy to continue with the extractions. But this, as I have said, is one of the points which I only raise in order to learn your opinion.

Next suppose we take up the character of the pain and analyse its worth as a means of diagnosing the two conditions more clearly. And, as to the origin of the pain, where does it appear to arise first ?

In the former case I spoke of, the pain was described as arising in the bone. I find that in the majority of instances the patients say it begins in the teeth, but in some cases it begins in the bone, and in others in the skin. Some help may be obtained from observations of this kind. If the patient states distinctly that the pain begins in the bone, and from there goes to the teeth, may we not conclude that the disease is in the trunk of the nerve, and at all events after extracting one or two teeth, should we not stop and turn our attention to the trunk of the nerve? So also if the pain appear to distinctly commence in the skin and only subsequently affects the tooth, this would point to beginning in the trunk.

Finally, if the pain is primarily referred by the patient to the teeth, it may be due to them or it may not. It may be that the pain is referred wrongly, just as we feel pain in the little finger when we strike the ulna nerve at the elbow.

And so we come to the next point, namely, *the mode of origin* of the pain. I suppose it is within the experience of all here that it is not always possible to find out from the patient what was the original cause of the mischief. One will say that it arose from a bad tooth, another that it was brought on by mental worry, another ascribes it to a cold, another to injury, and so on. Certainly I have not yet been able to find any common mode of origin. But here again my experience is extremely limited, and I should be glad of further information. I think, however, that if the pain begins *gradually*, and there are diseased teeth in the neighbourhood of the seat of origin as described by the patient, we may conclude that there is at least some probability that the teeth are the primary source of the mischief. But if the pain comes on *suddenly* it is more likely that the disease is in the trunk of the nerve.

Then with regard to the *character* of the pain. If it be constant, it would seem in most cases to be of peripheral origin, whilst if it is intermittent the cause is more probably in the nerve trunk. But in a very severe case both constant and intermittent pain may be present at once, and consequently these distinctions may appear not to hold good. Thus in the last case I quoted, the worst I have ever seen, the neuralgic pain was distinctly intermittent. For a few minutes the patient had relief from it, though she still complained of a constant pain in the vertex of the head, due no doubt to the general neurasthenia. The point to determine is, of course, whether the primary neuralgic pain itself is constant or intermittent.

Fourthly, with regard to the exciting agents. If you find that the pain is brought on most commonly by *movement*, this would seem to be characteristic of affection of the trunk of the nerve. The patients on whom I have operated all stated that movement of the jaw specially brought on the pain. Opening the jaw to eat or to speak brought on pain; and I secured temporary relief to one of them by tying up the jaw with carefully padded bandages. So far as I am aware, the effect of movement in causing attacks of pain is not so great in cases where this is due to peripheral irritation, and it must be obvious that the action of the muscles in opening or closing the jaws must press upon, and the movement of the bone must stretch and relax the nerve, and thus, if it be inflamed, give rise to pain.

I do not think we can attach much importance to the effect of other exciting agents. A patient will tell you at one time that cold brings on the pain, and at another that heat does, so that no general conclusions can be drawn from these facts.

Fifthly, I think that the *extent* of the pain is a very important indication. If, in addition to the fact that you have severe pain over the area of distribution of the nerve, you find also distinctly tender spots along the course of its branches, this is an indication that the whole nerve is in a state of hyperæsthesia, and that the primary source of the pain is inflammation of its trunk. We must, however, be on guard against the several fallacies referred to before which may creep in here. This referred pain may, of course, easily have a peripheral origin.

Finally, I should like to make a few remarks about *Treatment*. I have endeavoured to lay before you very briefly the outlines upon which we can discuss the probable origin of the pain, and this, of course, has a very practical bearing on the treatment. In a certain number of cases extraction of teeth or the removal by other means of other sources of dental irritation, may bring about a cure.

But as regards treatment in those cases in which extraction has not been followed by any lasting improvement. I have seen such cases treated by drugs, such as opium, ether, cocaine, croton-chloral, &c., but all fail sooner or later. One patient took opium to the amount of thirty grains per diem, and another took twenty-three grains, but at last it ceased to produce any effect. Alcohol will relieve the pain at first, but it soon wears off, and then exacerbates it. I have tried subcutaneous injection of ether, but with the same result. Cocaine does better, but also fails after a time. Croton-chloral has proved the most useful remedy I have yet seen tried. I may add that in some cases morphine seems actually to make the pain worse, and a practical objection to subcutaneous injection of all kinds in these cases is that the introduction of the needle is very apt to bring on an attack of pain.

With regard to surgical treatment. I think that experience has now made it clear that nerve-stretching should not be performed on the branches of the fifth nerve, although the results following its application to other nerves are very satisfactory. As regards the fifth nerve it offers just as many risks as the operation of avulsion, and the pain invariably recurs. Avulsion, on the other hand, is much more successful—in fact, it generally cures. Of course, I must not take up your time by dwelling upon the details to be attended to in carrying out surgical treatment, but allow me to say that from seeing the operation performed under different circumstances, I believe that success greatly depends on the efforts one makes to secure primary union. The cases in which the operation has not been successsful have almost invariably been those in which the wound has been slow in healing. Of course I am referring to cases in which the whole nerve has been removed, and not to incomplete operations.

Lastly, as regards the effect of the operation on the parts and on the patient. Of course it was to be feared that the removal of the nerve might interfere with the nutrition of the parts supplied by it, but as a matter of fact I have not seen any bad effects follow. The areas supplied by the various branches of the fifth are really remarkably limited, that supplied by the infra-orbital nerve, for instance, is very small. Fortunately, also, the branches which are most often affected in this way are not those which supply the most important parts. The ophthalmic division of the fifth, the resection of which might be followed by serious trophic changes, being rarely the seat of mischief.

But I really came here to ask for information not to give it. The information I particularly wish for is respecting the character of the pain, the primary seat of the disturbance, the mode of onset, the cause of its excitement or origin, and the possibility of the affection of other branches of the nerve in such instances of the commencement of the evil as have come under your notice.

I have only been able in the time at my disposal to touch upon the principal points which seem likely ultimately to lead us to a full appreciation of the causation and pathology of this extremely painful affliction, but if these points relating to the earlier stages of the disease can be cleared up by the wide experience of the members of this Society, I think we shall make a very great step forward.

CONTRIBUTIONS TO THE STATISTICS OF OPERATIONS FOR HARELIP.*

By Dr. R. Eigenbrodt,
Assistant Surgeon to Professor Trendelenburg's Clinic at Bonn.

At Professor Trendelenburg's request, notes of all the cases of hare lip, which came under observation at his clinic from the early spring of 1882 to that of 1886, were carefully collected, as also those that had been operated upon and enquiries made to ascertain the result in each individual case. This period (1882-1885) was chosen because the operations were carried out on the same principles, and almost all by the same operator. At least one year had elapsed since the operation in every case, so that the final results were ascertained.

This paper is intended solely as a contribution to the statistics of the operative treatment of hare lip. The object is to settle what the mortality really is after operations for the various forms of hare lip, both the simple and in no way dangerous, as well as the complicated and severe cases, and not only in the immediate period after the operation, but after a lapse of several months or years.

At Bonn, the operation is usually, if possible, performed between the third and sixth months of life. This must be held to apply to complicated cases of hare lip—to those in which the operation ought not to be undertaken earlier. Seventy cases came under observation between the 1st April, 1882, and the 1st April, 1885, but of these fifty-four only were selected for operation. In most of the remaining cases the children were sent away with instructions to their parents to bring them again after the lapse of a few weeks or months. Mirault's operation was the one selected in almost every case, with a slight modification, consisting in the partial removal only of the gum at the apex of the slit and in the carrying of the knife at a distance from the gum and in placing the comparatively large flap horizontally under the substance of the lip. Lateral incisions through the cheek below the nose were never required; the stretching of the tissues necessary to fill up the widest gap was always obtained by a more or less extensive separation of the lips, and also of the nose from the underlying bone.

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* Translated from the Berliner Klinisch. Wochenschrift.

In forty-four only of the cases operated on was it possible to obtain any information about the state of the patient and the result of the operation.

The cases may be divided into four groups. 1st group.—*a.* Simple unilateral hare lip, 12 cases; of those up to the spring of 1886 one lad died. *b.* Simple double hare lip, three cases; no death up to the same period.

2nd Group.—Complicated single harelip—21 cases, with two deaths.

3rd Group.—Complicated double harelip—Eight cases, of which four had died up to April, 1886.

Total, forty-four cases, with seven deaths. This represents a mortality of 16·3 per cent. only, and is the most favourable percentage hitherto recorded. (Billroth, 37·8 per cent.; Rose, 29·5; Fischer, 47·3; Czerny, 50; König, 33; Maas, 30; Bruns, 35·9.)

1st Group.

This includes all the simple and uncomplicated cases of harelip by which is meant those in which there was no division of the upper jaw or soft palate, as well as those in which there existed a slight division of the soft palate, the upper jaw, however, not being affected. The unilateral division were, in almost every case incomplete, *i.e.*, they did not reach into the nasal aperture. Healing took place in every case by first intention; all the children are alive and doing well, with the exception of one, which was operated on with good result at five months, but died six months after from scarlet fever.

b. The cases of uncomplicated double harelip were all incomplete fissures, the operations were all successful, and the children all survive.

2nd Group.

In this group are collected the cases of unilateral complicated harelip. The complication consisted in most cases of a simultaneous total division of the jaw and soft palate. In two of the cases there was a complete fissure through the hard and soft palates, but the alveolar border was not affected, and in three other cases there was only a fissure through the alveolar border in addition to the harelip. Thirty cases were submitted to operation, but in twenty-one only was it possible to get any information as to the present state of the children. In the histories of many of the cases, the oblique position of the intermaxillary bone is mentioned as greatly impeding the closure of the harelip. In several it was found necessary either to re-set a portion of the intermaxillary bone and to sacrifice a tooth, or to excise the intermaxillary bone altogether.

All but two of the children operated on are still alive. One which was operated at the age of four months died fifteen months afterwards suddenly of convulsions. The second fatal case was that of a child which was only three months old at the time of the operation, and died from unknown causes seventeen weeks afterwards.

3rd Group.

We now come to the most difficult and severe cases, as far as operation and prognosis, the cases of double harelip, complicated with division of the soft palate and a prominent intermaxillary bone. In every one of the eight cases the fissure was very wide, and the operation exceedingly difficult. In six it was necessary to perform Bardeleben's operation for the prominent intermaxillary bone. In one instance the prominence of the intermaxillary bone was so great, that three operations, the last performed when the child was in its third year, were required before the harelip could be altogether closed.

As regards the mortality of these children who are so badly organised, as regards both functions and appearances, it is found that very few of these malformed, and in many cases congenitally atrophic children survive if they are operated on during the first year of life. Out of five of aur cases operated before they had attained their twelfth month, four died, while all those operated after this period are still alive.

The experience which is also supported by that of other operators that the operations for complicated harelip undertaken after the first year offer *quoad vitam*, a far more favourable prognosis, a further collection of cases would most likely prove the law that such cases should never be operated during their first year, and that during this interval they should be most carefully and rationally cared for, *i.e.*, brought up.

I am unable to give any information as to the present condition of the intermaxillary bone, or whether the teeth they may support are of any use or not. Professor Trendelenburg does not remember ever having seen a case in which the intermaxillary bone became attached to the alveolar border of the maxilla.

In five out of the seventy cases observed, there was a hereditary predisposition to the malformation. Fifty-one of the children so effected were males, nineteen only females. In thirty-two cases the cleft was on the left side, in twenty-three on the right, and in nineteen on both sides.

The figures given above would tend to show that by carefully selecting the cases and by postponing the operation for a few months, the mortality percentage can be very much reduced. The danger of an operation cannot be accurately measured without taking into account the accidents of such an operation in a number of children who, through a high degree of congenital weakness of constitution, are predisposed to die at an early age, or who fall a prey to such, owing to unfavourable social surroundings.

GOLD FILLINGS.*

By Mr. J. F. Colyer.

Mr. President and Gentlemen,

In choosing Gold Filling as the subject of my paper this evening, I do so, not with the object of bringing forward anything new, but with the hope of gleaning fresh ideas by raising a good discussion.

Before however, entering into descriptions of the various methods of filling, I propose to venture a few remarks with regard to cavities, for on their careful preparation depends in a great measure the future success of the operation.

Firstly, I would advise the constant use of the rubber dam, for the following reasons: by its aid you are enabled to cut out the cavity dry, which necessarily means less pain to the patient, you are enabled to use both hands and also to complete the operation more thoroughly and in a shorter time. The rubber being *in situ*, open up the cavity freely, by means of sharp burs and enamel chisels, and here I would remind you of a method for breaking down the enamel advocated by Mr. Tomes; it consists in scratching the surface along the line of the intended cut and then putting pressure upon the instrument, the piece of enamel will be found to break off where the scratch was made; next remove as far as practical all soft tissue, the only cases in which decayed dentine may be retained, are those where removal would in all probability lead to exposure of the pulp, and where the dentine, though discoloured, is very hard; but whatever soft tissue you may leave in the base of your cavity absolutely none must be left near the edges, for decayed tissue is soft and yielding and would admit of moisture, which would rapidly prove destructive to your filling.

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* A paper read before the Students Society of the London School of Dental Surgery.

The decayed tissue having been removed, the next step will be the shaping of your cavity to a suitable form, and in doing this avoid leaving overhanging edges of enamel or anything approaching to receding angles and sharp corners, since in gold filling the pressure exerted is only directed in a straight line. If possible avoid weak walls—this very often happens from the unwillingness on the part of the operator to interfere with the appearance of the tooth, the result being that the walls either give way during filling or soon after, necessitating another operation under conditions less favourable. The strength, however, required for the wall of a cavity will depend on the position which the tooth occupies in the mouth, and the cavity in the tooth, for instance—in a cavity in a molar which is subjected to all the force of mastication, enamel must be left only where supported by a good base of dentine, whereas in a front tooth enamel alone may sometimes be left to form the wall.

In finishing your edges, always, if possible, leave them formed by enamel, since it is more indestructible than dentine, do not bevel them outwards, but rather shape them so that the dentinal surface of the enamel is smaller than the external surface, taking off the sharp edges with suitable instruments, by this means avoiding your gold scaling at the margins of your cavity.

Another point in shaping the cavity is the relation of the tooth to its neighbours, for instance, in preparing cavities in contiguous teeth, endeavour to shape the cavities so that when filled, the gold of the one will be in contact with the gold of the other, rather than the enamel of the one with the enamel of the other, by this means you will lessen the chance of a recurrence of decay between them.

In preparing crown cavities little can be said, except that large undercuts of all kinds must be avoided, especially at the anterior part, and that the walls must be left just out of the perpendicular, that is, slightly divergent from the masticating surface towards the neck of the tooth.

Interstitial cavities always open up by cutting down from the crown and in bicuspids it is best to include the fissure, whether it is decayed or not, since it will give the filling a better hold, whereas if retained it would only form a nucleus for fresh decay. In this class of cavities never make the cervical edge near the termination of the enamel, since it is liable to chip off in filling, but rather remove it all and let the cervical edge be formed by dentine. Never groove this part of the cavity, but leave it as flat as possible, the best instrument for finishing it being an ordinary spoon excavator. The labial and lingual walls may, however, be grooved slightly and made divergent from the crown towards the neck. If cohesive gold is to be used, starting points will be required, these should be drilled in the dentine, and in such a manner that the deeper they are made the more they will recede from the pulp.

In the preparation of cavities in the front of the mouth for contour filling, the general mistake seems to be in the leaving of too much enamel on the labial wall, so that the gold shall show as little as possible, this would not matter if you could insure getting the gold in perfect contact with the enamel, this, however, is sometimes extremely difficult, and the consequence is that moisture gets access to the cavity, and causes the gold to appear black through the enamel, which is far more unsightly than if the enamel had been cut back and the gold allowed to show. Hence in these cavities, cut the enamel back so that all parts of the cavity can be got at easily, leaving your edges smooth and strong, but in some cases, as before mentioned, it is allowable to have walls formed by enamel only.

The retention of gold in these cavities will be obtained by very slightly grooving the labial and lingual walls, and by having two good starting points at the base, and a good opposing point at the apex. The cavity being prepared, the next step will be to fill it, for this purpose gold is usually prepared in two distinct forms, viz:—the cohesive and non-cohesive, the difference being brought about by a slight alteration in their manufacture.

Both are prepared in the form of cylinders and foil of various sizes, &c.

The qualities desirable for soft gold being that it shall be tough, so as not to crumble under the instrument, that it shall be exceedingly yielding and free from harshness.

The portions of the plug are held together by being intimately interlaced and wedged against each other, this can only be obtained by the several portions sliding readily over one another, hence any approach to adhesiveness causes the plug to contain hollow places.

With cohesive gold, on the other hand, each piece should cohere to that already in place, and should not move in the slightest degree after it has once touched the filling. Moisture, grease, and exposure to the air, destroy its cohesiveness, hence it is necessary that it should never be touched with the fingers. Good cohesive gold can be annealed to a dull red heat without becoming harsh.

Turning again to the non-cohesive gold, we shall find that it can be used most advantageously in crown and at the upper part of interstitial cavities, and that it is best employed in the form of cylinders. In using it do not place the cylinders in one by one, but rather pack them in rows. For instance, take three or four between the blades of the conveying forceps, and place them in the cavity towards its posterior part, and now, holding them in position with an instrument in the left hand, condense them first on one side, then on the other, and finally in the centre, this being done, another row of cylinders is introduced and condensed as before, and this is repeated until the cavity is a little over two-thirds full, a different mode must, however, now be adopted, cylinders should be placed round the sides of that part of the cavity which is still unfilled and condensed by wedging from the centre, the last portions of the filling being introduced in the form of tape. The whole filling should then be condensed as much as possible by means of suitable instruments, and after this the surface of the filling should be tested by endeavouring to force into the gold an instrument generally known in the hospital as a "Lord's Plugger;" the hole made by the plugger being filled up by tape or very small cylinders, this latter proceeding, viz., the riffling, should be done until it requires some considerable force to introduce the plugger into any part of the filling. The filling should then be trimmed by means of finishing burs, &c., and afterwards thoroughly burnished, taking care to do this more especially at the edges.

By adopting this method a fair sized cavity can be filled and finished in less than half-an-hour.

Cohesive gold on the other hand is best used in the form of tape (folded foil), No. 32 will be found the most useful thickness for filling starting points, Nos. 48 to 96 for the other parts of the cavity.

Cohesive gold plugs can be started in two ways, one by using starting points, the other by wedging a large cohesive cylinder into the base of the cavity.

The former method should nearly always be used for front teeth, and where you fill approximal cavities with cohesive gold throughout.

The latter method is most useful in crown cavities, where, in drilling starting points you run a great risk of injuring the pulp.

The filling being started, fresh portions of gold are added and thoroughly condensed, until the cavity is a little over full, it should then be trimmed in the same way as that adopted for non-cohesive.

A method of filling which in this Hospital goes by the name of Mr. Woodhouse's consists in a combination of the above two. In this method the edges and walls of the cavity are lined with non-cohesive, the central part being filled with cohesive. It is quick, the other advantage claimed being, that you have non-cohesive in contact everywhere with the tooth substance, and that hence the filling is more watertight than an ordinary cohesive, and having cohesive gold in the centre, the filling in this part will stand mastication better than non-cohesive.

Besides the above methods gold is often combined with tin and amalgam. That its combination with the former metal makes an extremely useful filling there can be no doubt, the tin being used for lining cavities and also for using at the cervical edge; the advantages claimed for the tin being that it is extremely malleable and adapts itself easier to the walls of the cavity than ordinary gold, also that it acts as a preservative to the dentine. Gold combined with amalgam is most useful in those cases where the edge of the cavity is below the gum, as for instance buccal surfaces of molars. The tooth should be filled with amalgam to just above the level of the gum, the edges, &c., being trimmed and the gold placed in the next day.

Some argue that electrical action is set up by the combination, but I think that is more theory than practice, I have never yet found a patient to complain of any such kind of action.

Another mode of filling which claims our attention is that known as Herbst's, it consists in moulding gold best used in the forms of cylinders to the walls of the cavity by means of rapidly rotating burnishers.

For this method it is needful to always have four walls to your cavity, and hence should it be an interstitial, you must prepare a matrix of steel, shellac, &c.

Fillings made on this system withstand the ink test, and in teeth which have been split open, the gold against the walls will be found to present a dense burnished surface quite unlike that obtained by ordinary means.

Time will prove the value of these fillings, as a lining to a cavity it seems to be of great value, but for places where great cohesion is wanted I do not think it can be trusted, the cohesion not appearing to be nearly so good as that obtained by the ordinary method.

The point as to which filling is best, is far from being settled. For non-cohesive gold it is claimed that it adapts itself better to the walls of the cavity and that it is quicker than cohesive. A cohesive gold on the other hand, though perhaps occupying a longer time in completing, can not only be made to adapt itself equally as well to the walls of the cavity as the non-cohesive, but also has this advantage, that it is harder on the surface and that it is better able to withstand any leverage which may come into play.

The various advantages and disadvantages of gold over other filling I have purposely omitted. In conclusion I have to thank you all for the kind attention which you have given me, and also to ask your indulgence for the many shortcomings of my paper.

JOURNALISTIC ECCENTRICITY.—One always learns something in reading the pages of our well-informed contemporary the *Lancet!* Looking over some back numbers, in a brief notice of the Glasgow meeting of the B.D.A., we found the following :—" Sir Edwin Saunders, Mr. Smith Turner (*the newly-elected President of the Association*), Mr. Felix Weiss, Mr. Morton Smale, and many others took part in the proceedings, Mr. Brownlie (Glasgow), being in the chair." Did you know Mr. Smith Turner had been newly elected President of the Association ? We thought he had been made President of the Representative Board, but of course we are willing to take a back seat, as the *Lancet* says otherwise.

British Journal of Dental Science,

LONDON, NOVEMBER 1st, 1887.

STOCKTAKING OF THE CONGRESS, 1887.

We have come to the close of the Ninth International Congress, and for three years we shall be free from the necessity of contemplating its successor. What, then, has the Congress done? Many from our midst went over to Washington, but what benefit has their visit been, either to themselves or to the profession at large? To estimate the general work of the Congress upon any scale of justice we have to remember two incidents which occurred during the period of its preparation. The first event was the great and most unfortunate split of the East from the West and South, which at one time threatened to abort the whole scheme, and which eventually crippled the endeavours of the Executive and prevented the meeting being representative. As a result of the secession of the East, not only did the Americans lose the co-operation of many of their most illustrious men, but much distrust and timidity were engendered in the minds of foreigners. Nor can it be denied that in spite of the strenuous, able, and kindly efforts of the American officers of the Congress, the meeting was permanently injured by this disruption, and many of the best known names of the Medical Profession throughout the world were conspicuous by their absence from Washington. And the other incident was the foolish attempt made to quash the Dental and Oral Section, an attempt which was so completely frustrated that the said Section became one of the most, if not the most important departments of the Congress. In numbers the meeting at Washington was behind that of London, 1881, for while 3,182 registered their names in London, 2,755 persons were credited to the American meeting. All who were guests at Washington feel very cordially their indebtedness to their American fellow professionals, and will for a very long while remember their hospitality and courteous bearing towards the "strangers." Among the Sections our own specialty was very conspicuous; with 500 entries it was able to present better audiences and wider discussion than most of the other sections. If the communications read were not all very first rate, it must be remembered that the Committee appointed to whinnow the chaff from the wheat appeared to have taken too good-natured a view, and to have left their "gift of criticism" behind them. There can be no doubt, and we are pleased to find our professional brethren of America were the first to notice the matter, that much really valuable material was crowded out by the intrusion of silly papers and vapid discussions. As far as English Dentistry is concerned it is not going too far to say, that we were not represented. No really important paper was offered by an English Dentist dealing in an exhaustive way with professional matters, and the leaders of the English profession held back in a most regrettable manner from the Congress. A feature of our Section which interested all, and imparted a practical relief after some of the rather slow "talkie talkie" was the establishment of Clinics. No class of professional entertainment can compare with that afforded by seeing another actually engaged upon some new method or unfamiliar development of *technique*. One often reads with wide-opened eyes and mouth agape of prodigious developments of American dental art, and all of us were more anxious to witness with our own eyes the actual practice than to hear the theory of "how to do it." After all, an ounce of practice, especially when it is dental, is worth a hundredweight of precept. Clinics are what we all have need of, and it would spare us a good deal of valuable time if every one who brought a new procedure before a society should be bound to demonstrate upon a patient the practicability of his theory.

One other lesson taught by the Congress needs comment. Although in London we possessed an Oral Section at the

Congress of 1881, the dentists were left out in the cold at Copenhagen in 1884, so that the undoubted success of a Dental Section in 1887 gives earnest of its continuation in subsequent meetings of the International Medical Congress. After much dispute and many rather silly papers anent the subject "Is Dentistry a Branch of Medicine?" the American mind has settled down into an affirmative state, and there we trust it will rest. In England, with perhaps a few exceptions, dentists regard themselves as part of the brotherhood of the healing art, and are so received by the doctors. As time goes on, most dentists will bear registrable medical diplomas over and above the L.D.S., and then the matter will be settled, for the present a few storms stirred up in teacups are amusing, and break the monotony of dental life. The Congress of 1887 is over; but friendships made, debts of hospitality incurred, are like chains of roses, unbreakable by their very nature, and will, we trust, prove sempiternal. When America comes to England let us not be wanting in efforts to show her how heartily we appreciate all her past kindnesses, her hospitality and courtesy.

DINNER OF PAST AND PRESENT STUDENTS and their friends of the London School of Dental Surgery, Liecester Square.—Mr. George Gregson has consented to take the chair on Dec. 3rd, when the dinner will take place at the "Holborn." The dinner ticket costs half-a-guinea, of course, exclusive of wine. Mr. Gregson has worked so hard and patiently for so many years for the commonweal of the profession that we are sure very many will be pleased to support the chair, and give him an ovation such as he deserves. Dentists who have busy practices know how important it is to have appointments duly booked, and how trying to the nerves are "casuals," let them remember the same applies to arrangements for the dinner and let them send at once to Mr. Morton Smale, intimating their intention of being present.

COLLEGE OF SURGEONS OF ENGLAND.—The Association of Fellows and Members have issued a "whip" for the General Meeting to take place Nov. 3rd at 3 p.m., at Lincoln's Inn Fields.

THE ENTRIES AT THE MEDICAL SCHOOLS.—The following list may be taken as substantially correct:—

	A.	B.	C.	D.	E.
St. Bartholomew's Hospital.........	140	18	0		158
Charing Cross Hospital	48	11	16	0	75
St. George's Hospital	33	2	1	1	36
Guy's Hospital	64	16	0	15	80
King's College	37	11	0	43	48
London Hospital	80	45	0	4	125
Middlesex Hospital...	48	28	7	1	83
St. Mary's Hospital....................	69	28	2	16	99
St. Thomas's Hospital	75	33	0	5	108
University College	69		0	74	69
Westminster Hospital	20	4	1	0	25
London School of Medicine for Women	16	2	0	3	18
University of Durham College of Medicine	33	27	—	—	60
Bristol Medical School...............	22	2	0	0	24
Owen's College, Manchester	70	16	5	37	91
Queen's College, Birmingham......	40	19	2	9	61
Yorkshire College, Leeds	41	5	0	0	46
London School of Dental Surgery	24	—	25	—	25
National Dental Hospital	10	—	10	—	10

A. Number of students who have entered for the full curriculum.

B. Number of students who have joined for special courses.

C. Number of Dental students.

D. Number of students who have joined classes for preliminary scientific instruction.

E. Total, excluding students attending classes for preliminary scientific instruction.

The above returns appear to show a distinct increase in the number of students who have entered at the metropolitan medical schools. The total number who have entered for the full curriculum is (excluding the students at the London School of Medicine for Women) 683. The numbers entering during the past five years are as follows:—1883, 622; 1884, 605; 1885, 587; 1886, 647; 1887, 683.

ENGLISH GUESTS AT WASHINGTON.—It is doubtful whether in the "multitude of medical degrees there is much wisdom," anyway, the published lists of English Physicians and Surgeons are "mixed" to say the least of it. The puzzle is how a leading dental contemporary has allowed itself to follow suit and jumble up half the profession. A few examples may prove instructive. Few members of the profession are better known than Prof. Humphry, of Cambridge, and Prof. John Marshall, President of the Medical Council, and yet they are called respectively Humphrey and Marshal, while the former, although essentially a scientist, is bereft of his F.R.S., yet Sir James Arthur Hanbury, who is adorned with the honorary F.R.C.S., Ire., figures as F.R.C.S., Dr. William Murrell, F.R.C.P., is designated M.D., M.R.C.S., and Prof. John Tweedy, F.R.C.S., becomes converted into an M.D. Upon the whole, the list is really amusing reading.

THE GUBERNACULUM DENTIS.—M. Malassez, who has been studying the *gubernaculum dentis*, has found that the milk teeth are contained within a bony socket, from which passes a canal containing the gubernaculum. This canal opens on the alveolar border. The gubernaculum is formed by longitudinal fibres, in the midst of which are epithelial masses. When the tooth emerges, it finds itself surrounded by fibrous tissue and epithelial cells, and it is the cystic degeneration of this epithelium that gives rise to parodontal cysts.

PHYSIOLOGY EXTRAORDINARY!—Mark Twain has done good service in giving the following gems of answers, culled it is averred, from answers to questions put to "advanced" students (save the mark!) "Physilogigy is to study about your bones, stummick and vetebry." "Occupations which are injurious to health are carbolic acid gas, which is impure blood." "We have an upper and lower skin. The lower skin moves all the time, and the upper skin moves when we do." "The body is mostly composed of water and about one-half is avericious tissue." "The stomach is a small pearl-shaped bone siturated in the body." "The gastric juice keeps the bones from creaking." "The chyle flows up the middle of the backbone and reaches the heart, where it meets the oxygen and is purified." "The salivary glands are used to to salivate the body." "In the stomach starch is changed to cane sugar and cane sugar to sugar cane." "The olfactory nerve enters the cavity of the orbit and is developed into the special sense of hearing." "The growth of a tooth begins in the back of the mouth and extends to the stomach." "If we were on a railroad track and a train was coming, the train would deafen our ears so that we couldn't see to get off the track."

HOW TOOTHACHE AFFECTS ROYALTY.—According to a contemporary, there is said to be no foundation for the statement that the Ameer's life is in great danger owing to the amputation of his foot consequent upon gangrene. The latest intelligence from Afghanistan states that the Ameer is at present at Pagham and in robust health. He has, however, recently suffered from toothache, in consequence of which an English dentist has gone to visit him. Abdul Rahman has long been a sufferer, and some strange tales are told of his ferocity when under the influence of pain. In one case, it is said, he ordered the instant execution of his physician, who had applied a blister in order to give him ultimate relief.

TO DEODORIZE BENZINE.—The disagreeable odour of benzine can be removed by shaking repeatedly with plumbate of soda, made by dissolving oxide of lead in caustic soda, and rectifying. Simply shaking with charcoal and filtering will partially remove the odour.

Abstracts of Foreign & British Journals.

ITEMS OF INTEREST.

IMMEDIATE ROOT FILLING.

By A. E. BALDWIN, M.D., D.D.S.

HE had often been struck by the difference between the statements of operators who had just performed beautiful, interesting, and "successful" operations in pulp capping, and the remarks of the patients when subsequently having abscesses treated; so of roots filled, in which the nerves had been "saved" by capping! in near pulp exposure—not merely acute pulpitis and a carious spot—the better plan is to devitalize, remove the pulp, cleanse and dry and immediately fill the roots. Believing the usefulness of the pulp was accomplished when the tooth was fully developed, he would rather save the pulp alive in a child than in an adult. If the condition of the pulp-chamber, root canal, or abscess, is bad, the cause is removed by the above procedure; but if the root is necrosed, treatment through the root canals will be useless. He would procure free access to the chamber and root canals, and cleanse thoroughly, removing all solid and fluid contents as far as can be done by the most painstaking efforts; then wiping out with a ninety-five per cent. solution of carbolic acid, followed by alcohol. Further, he insists upon thoroughly drying the canals and dentinal tubes with hot air, sometimes spending ten or fifteen minutes in this process, never attempting to fill till he is sure the canals and remaining contents are thoroughly dried. For a filling material that shall be non-irritating, insoluble in the fluids of the mouth, easily introduced, and that will not deteriorate, hermetically sealing the dry canals and tubuli, he selects the base-plate gutta-percha dissolved in chloroform, as thick as cream, pumped in, by means of a fine broach of piano wire roughened by rolling on a hard wood base under a fine metal file. This broach is wound with a few fine shreds of cotton and dipped in the solution; when he thinks the roots well filled, he lets them remain for a short time undisturbed, then he heats a small piece of base-plate gutta-percha, and placing it over the opening of the root canal, with fine pointed instruments, he bores the contents to the uttermost limits of the canals, and even into the open tubules. Failure in root fillings is caused, he believes, by moisture causing the solution to shrink *from* the walls in hardening, while if the canals are thoroughly dry, the shrinkage will be *to* the walls, the gutta-percha adhering with the greatest tenacity to contiguous dry surfaces. If no trouble follows, he dries the gum over the affected part, and applies equal parts of tinct. iodine and tinct. aconite root. With freshly devitalized pulps, after a week or ten days, he removes the dead tissue, thus giving less pain to the patient than by earlier removals. If there is continued moisture through the open foramen, he seals in a shred of cotton saturated with a ninety-five per cent. carbolic acid for a day or two, this never having failed but once. Teeth having abscess with fistulous openings are immediately filled; blind abscess is opened, and the patient dismissed for a day or two till the soreness subsides.

FATAL HÆMORRHAGE FROM THE EXTRACTION OF TEETH UNDER COCAINE.

Reported by C. Edmund Kells, Jr., D.D.S., New Orleans.

At about 11.20 a.m. the patient presented himself, accompanied by his wife, for the purpose of having all (twenty or more) of his teeth extracted. An examination showed teeth and roots loose and gums inflamed. He had been suffering greatly from neuralgia and wished cocaine used to alleviate the pain of extraction. Nothing unusual being observed about the man, and as he had eaten nothing since early morning, a "test dose" of 7½ minims of a four per cent. solution muriate of cocaine was injected into the gums. At expiration of seven minutes ten minims of the same solution were injected. This was followed at once by local applications of a perhaps fifty per cent. solution of the same drug to the gums. At the end of twenty minutes extraction of the teeth was begun. At once we noticed spasmodic contractions of the muscles of the body and face, which became so violent as to render the application of the forceps to the teeth difficult. Therefore, extraction was contiuued till ten teeth and four roots had been removed, all anterior to the molars. This being accomplished without pain, patient desired operation continued till all were removed, but he was finally persuaded that enough had been done to afford him relief. His restlessness continuing, an injection of fifteen minims of camphor water was given which seemed to quiet him; amyl nitrite was also inhaled. Hæmorrhage having ceased, the patient was discharged at about one o'clock.

After an hour later, the patient sent word to the dentist that he still had another aching tooth which he desired to have out, but this request was refused, on the ground that he had had enough "excitement" for one day.

At 3.30 the dentist was sent for to call and stop hæmorrhage, which he immediately proceeded to do. Finding his patient excitedly talking and walking up and down his rooms, and spitting blood in *very large* quantities, fifteen minims of camphor solution were injected in his gums and an attempt to plug the bleeding sockets was made, but failed, as he would not sit down and would suck out a pledget as fast as it was packed into a socket. At four o'clock his doctor arrived, when plugging of the sockets was again unsuccessfully attempted. The doctor suggested a straight jacket, to control his violence, but this was objected to by the family. A mouth-wash of hot solution of iron and alum proved useless. An ice-cold solution of same was used, with more success. In the meantime, attempts to inject about one-eighth or three-sixteenths grain morphine were made, but only with partial success, owing to his constant movements. At last he became quiet and laid down on the sofa. The doctor then left, after giving instructions to repeat the dose of morphine after the lapse of twenty minutes if he again returned to his violent condition. In a short time his restlessness returned, and the appointed time having expired, one-fourth of a grain of morphine was successfully injected, after which he quieted, immediately becoming very pale, though his pulse felt "full and strong." At seven o'clock, as he was quietly lying on the sofa, without any further examination, he was left in charge of his family. A few minutes later his doctor returned, and found his patient breathing once per minute. Active measures to restore normal respiration was resorted to immediately, and once, while under the influence of an electric current, it was raised to thirteen per minute, but all efforts proved futile, and it soon began to fall again, finally ceasing entirely at about one o'clock a.m.

DENTAL COSMOS.

FILING TEETH.

By Dr. I. B. Davenport, Paris, in N.Y. Odontological Society.

Just as the teeth change their places, after extractions, so do they where spaces have been made by the use of the file; but for several reasons this last plan of securing *temporary* spaces is more disastrous in its results than is that of certain extractions.

Some of the immediate consequences of filing are the diminishing of the grinding surfaces, lessening the force of mastication by the removal of lateral support, and permitting an unnatural strain on the sockets of adjoining teeth; but more evident and annoying is the pain caused by the exposure of the terminal dentinal fibrils, and by the crowding of food into the spaces and against the gums. A single filed space in a well articulated arch is likely to remain through life. At first such a space is easily cleansed, but constant crowding against the gums causes their recession, and a little pocket is thus formed, in which food is apt always to remain, though it may be *called* a "self-cleansing space," and sooner or later new decay begins at that point, and it is most painful and difficult to treat. Restoration of contour at this stage is not easy.

When many filed spaces have been made in the arch the teeth move up till they are again in contact, just as they do after extractions, unless prevented by a faulty articulation. The new contact, instead of occupying the smallest extent of the convexity of the thickest and most perfect portion of the enamel, with the space at the gum washed by the fluids of the mouth, is at or near the gum where the enamel is thinnest, or perhaps has been filed away, leaving the dentine exposed. Any plan of filing the teeth that changes the contact from the normal point will diminish the size of the arch, because each tooth occupies such a proportion of the arch that the natural points of contact are on a line passing through the greatest diameter that the teeth can possibly furnish without injuring the articulation.

The system of filing the teeth described pre-supposes that the spaces will be self-cleansing, and therefore the dentist is apt not to instruct the patient either in the need or in the special ways of securing their perfect cleanliness. In the long run filed teeth require especial care to preserve them than do teeth in normal contact, as food is sure to wedge between them, and is dislodged with difficulty. The filed surfaces are less capable of resisting corrosive agents, and failure to secure cleanliness soon results in decay.

Caries is likely to appear and re-appear at the gum-margin of the filings each time lower than the last. If a point of contact had been secured at or near the gum-line, it is lost by the undermining decay, and the teeth move up and transfer the point of contact perhaps far below the gum, and this in turn is destroyed by new decay.

After repeated slicings with the file for the renewal of fillings, it becomes impossible to secure adequate anchorages without endangering the pulp; or the pulp may be exposed by decay at the thin sensitive neck, and at last must be destroyed. Weakened by decay, by filing, and the cutting away necessary for root treatment, and robbed of their support, the teeth break down under the ever increasing strain brought on them, extraction affords about the first relief to such patients.

Teeth unable properly to masticate the food, had better be substituted or supplemented by a well-constructed appliance.

After a time teeth extensively filed assume a fixed position, and then *tight contact between the teeth will be the rule;* but here and there a permanent space may be left, and that without any apparent reason, unless both arches are looked at as a whole when in articulation ; but when so considered they will be found to form one unbroken line of teeth, contact being secured sometimes on the lower and sometimes on the upper arch, but always made continuous by the articulation.

In some cases it is wise to restore the contour of teeth mutilated by filing, relieving excessive gum pressure or a sensitive tooth-neck.

INDEPENDENT PRACTITIONER.

STENOCARPIN.

By Wm. H. Mitchell, D.D.S., Bergen Point, N.J.

Stenocarpin was discovered by Dr. Seward in making an analysis of the leaves of the tree known in Louisiana as the Tear Blanket Tree. It was noticed that a poultice of the leaves, applied to the fetlock of an horse that had been injured, possessed anæsthetic properties.

The Tear Blanket Tree grows along the banks of the rivers and streams of the lower Mississippi valley, and attains a height of 35-40 ft., the branches spreading from 30-35 ft. The bark is smooth and covered with bunches of sharp spines that spring from a parent thorn, the bunch being quite flexible, but exceedingly difficult to detach from the tree, from which it grows at a right angle. These thorns often reach six inches in length. The tree bears a bean which grows in pods from eight to ten inches in length. It is believed to be much superior to cocaine.

Since April Dr. Mitchell has used it as an obtundent of sensitive dentine, and has had remarkable success with it. It has been usefully employed as an obtundent for soothing exposed pulps, for removing pulps or growths from the surface of the mucous membrane. A sebaceous tumour was removed painlessly from the forehead, after saturating aborbent cotton with the two per cent. solution, which was placed over and around the growth. After a period of twenty minutes the sensation of the part had disappeared, and at the end of half an hour the operation was commenced and finished, removing the growth entire without any pain, save at one time when, the deepest part of the operation, a slight sensation was preceived. A quantity of the solution was immediately applied, and the operation completed. A suture was passed through the wound, and it healed by first intention.

It is a direct antagonist of morphine and opium, ten drops of the two per cent. solution neutralizing one grain of morphine or six of opium. Hypodermically administered, it is especially useful as an aid in the extraction of teeth, when it is not desirable to administer a general anæsthetic.

SOUTHERN DENTAL JOURNAL.

SMOOTH PLATES TO PREVENT RUBBER SORE MOUTH.

By Dr. A. H. Hilzim.

The way to prevent sore mouth is to have the plate come from the vulcanized polished. The method obviates the use of gold lining. There is nothing in nature so smooth as the mucous membrane of the oral cavity moistened with saliva.

Rubber plates vulcanized in contact with plaster cannot be smooth, and can only be made so at the expense of the fit of the plate, by brush, wheels, sand paper, &c. When the fit is impaired, there is more or less movement of the plate, and this in itself would irritate and inflame the parts. If left rough, the same result follows, and the rough surface catches and holds filth, another cause of sore mouth. The whole mischief comes from irritation of the mucous membrane.

To insure a smooth plate, secure a smooth and accurate impression by using the best plaster. Also use the very best plaster for models. Add the plaster to the water very gradually, allowing the plaster time to absorb the water. When sufficient to absorb all the water, stir the mass gently and pour, being careful to settle the first well in the impression by jolting the cup. If wax or modelling compound has been used for the impression, do not separate by moist heat, as that has a tendency to soften the model. Trim the model of any irregularities, fill depressions, and cover with No. 6 tin foil, this protects the model from abrasions while handling. Grind the teeth with good square joints, cover the joints outside with thin oxy-phosphate, and imbed.

The flasks being separated, the No. 6 foil will adhere to the wax plate. Now cover the model with No. 20 tin foil—the No. 60 made for the purpose is too heavy and will mar the fit of the plate. Remove the wax from upper half of flask, not by hot water, but by pulling it away with instruments. Cover the joints inside with oxy-phosphate. Heat both halves of flask before packing, heat the rubber for packing over hot water, and always measure the rubber in the guage, cover the lingual or female portion of model with a good coat of liquid silex. Depend on finishing the wax model as you wish the plate to appear, with blow pipe, and not have to scrape the plate.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Discussion upon the Pathology of Inveterate Neuralgia of the Fifth Nerve.

The President said that though Professor Horsley had stated that he had brought forward the subject with the view of obtaining further information, he (Mr. Tomes) would not take him at his word, but would prefer to ask him a few questions.

There was one fact in connection with these neuralgia cases which had always been a great puzzle to him, and one of which he had never been able to give a satisfactory explanation. He hoped Professor Horsley might be able to throw some light upon it. He could never quite understand how it was that great relief was often obtained in these cases by doing the wrong thing, by doing something which subsequent experience of the case showed could not have touched the root of the evil. For instance, the first step would be to cut down upon the inferior dental nerve near the mental foramen, and remove half-an-inch of it. This would very probably stop the pain for a few weeks. Then it returns as badly as before, so you drill into the canal, and destroy the nerve in the neighbourhood of the lower wisdom tooth. This again gives relief for a time, but the pain recurs. It is evident that neither of these operations have reached the true seat of the mischief, yet what you have done has arrested the pain for the time being. He had in mind the case of a man for whom the nerve was first divided at the mental foramen. This gave him great comfort for a time ; he was able to eat, talk, and shave without pain. But a relapse occurred, and the nerve was then destroyed by drilling into the inferior dental canal. This set him perfectly right for eight months, when the pain returned, and he came begging that the operation might be repeated. The drill was accordingly run down upon the nerve in the same place, but without doing any good. Subsequently, the patient went to Mr. Durham, who exposed the nerve by dissection inside the jaw near its entrance into the dental canal and stretched it forcibly. This also did good for a time, but did not cure the patient, who was, however, afterwards lost sight of. The point he wished to put to Professor Horsley was why the doing of ineffectual operations, such as the above or the extraction of teeth, so often did good, though subsequent knowledge of the case showed that they could not have reached the actual seat of the disease.

There were some cases published by Dr. Hodgin, of St. Louis, which did not appear to be much known in this country, in which he drilled into the inferior dental canal from the alveolar border above it. About half of these appeared to have been successful, and the rest failures.

Then there were some operations by Professor Pancoast, of Philadelphia, to which his attention had been called by Professor Gross. Professor Pancoast exposed the ascending ramus of the jaw, and trephining this, reached the nerve above its entrance into the canal, but he did not appear to have traced the nerve upwards as Professor Horsley had done.

Professor Horsley seemed to lay great stress on the trophic alterations which were seen in these cases as an indication that the mischief was in the trunk of the nerve. But these trophic lesions were by no means always met with. He had himself seen three cases of epileptiform neuralgia of great severity, in which these changes, if they existed at all, were so inconspicuous as to escape observation. One of these cases, of nine years' duration, a man who could not bear to have his lips touched without suffering acutely, was, to everyone's surprise, ultimately cured by electricity.

There was one other point in Professor Horsley's paper which he would refer to, viz., his suggestion that pain of an intermittent character was indicative of disease in the nerve trunk. He (the President) thought that all dental practitioners would be familiar with the fact that intermissions occurred in cases where the pain was clearly of peripheral origin; intermittent pain was indeed rather characteristic of mischief in the tooth pulp.

There was another class of cases with regard to which he should be glad to obtain Professor Horsley's opinion, viz., cases of neuralgia in edentulous jaws, which Dr. Gross cured by cutting out pieces of bone. He had been consulted by Mr. Canton with reference to a case of this sort, and advised drilling some holes in the bone, which relieved the pain for a considerable time. This, of course, could only have done good by altering the nutrition of the part, or by counter-irritation.

Mr. Henri Weiss said he had only happened to meet with one well-marked case of this affection. The patient, a man, had perfectly sound teeth, and he suffered no pain unless something touched the right side of his face. Contact with the skin, and especially pulling the moustache, at once brought on a severe paroxysm of pain, attended with watering of the eyes and injection of the skin.

Mr. J. S. Turner thought that the most important part of Professor Horsley's paper was that in which he directed the attention of members to certain points in which they could help him in his endeavour to establish a diagnosis of this disease. He asked, in the first place, for further information as to the peculiarity of the special sensibility which occurs in patients suffering from this affection, the peculiarity consisting in the fact that the skin is exceedingly sensitive to soft touch, whilst the same amount of pain is not produced by hard pressure. The same thing was seen in the eye. The practised ophthalmic surgeon handled the eye in what appeared to be a very rough manner, yet he really caused the patient less pain than a timid operator who approached the eye gently. He (Mr. Turner) had often noticed that these patients would shrink when the skin was lightly touched in the neighbourhood of the painful spot, especially about the alæ nasi, and men had to give up shaving on this account. But if firm pressure was made the pain was not felt; the pressure seemed to obtund the pain. In the operation of nerve-stretching as usually performed, there was a good deal of nerve-pinching, and he thought this nerve-pinching had probably as much to do with the destruction of sensibility as the stretching.

There were many obscure causes of pain in the teeth which rendered the diagnosis of its central or peripheral origin very difficult. He had in mind a case, which occurred many years ago in the practice of a well-known member of the profession, now deceased, in which intense pain was brought on by movement; when at rest the patient suffered little or no pain. A tooth was at length extracted, and in the canal was found a loose piece of secondary dentine, the movement of which when the patient moved had caused the pain.

He remembered reading a lecture by Prof. Marshall some three or four years ago in which a description was given, with a diagram, of the *nervi nervorum*, branches which, springing from the trunk of a nerve, ramify in its sheath and supply the nerve itself with sensation. It was the irritation of these, through their end-organs, which caused the pain in the cases referred to; and supposing one of these, springing from the inferior dental after it had entered the bony canal, to be irritated, this would in some measure account for the cessation of pain, referred to by the President, which occurred when the wrong thing was done, and its return when the nerve recovered its normal condition at the portion which had been surgically injured.

Mr. Stocken said he had some time ago brought before the Society two cases of this disease which had come under his observation, but as they were so closely related to the subject under discussion, perhaps he might be permitted to mention them again. The first was that of a lady who had suffered for nine years from a very severe form of neuralgia. She could not speak without great distortion of the features, one eyelid drooped, the tongue was swollen, and the saliva ran out of her mouth. She could, however, always obtain relief by assuming the recumbent position, and she enjoyed occasional intermissions, so that she was free from the attacks during nearly half the year. Still they invariably recurred in spite of all sorts of remedies. She had tried sea voyages, galvanism, and homœopathy, without success. Seven teeth had been extracted, and the rest appeared to be perfectly sound. As a last resort, he recommended aconite and gelsemium, which gave her complete relief. She remained free from pain for two years, and although she had had occasional threatenings since, they had always yielded to the same remedies.

The other case was very similar as regards the symptoms. The teeth were sound with the exception of a canine, which was slightly carious and sensitive. He removed it and found the pulp completely disorganized, consisting almost entirely of an agglomeration of calcified bodies with only a trace of blood-vessels near the apex of the root. She was relieved for a time, but the pain returned as badly as before, and after living in suffering for some years she died.

Mr. STORER BENNETT said he was not quite clear as to the exact nature of some of the questions which Prof. Horsley had put to the meeting. He understood him to say that he wished for information as to whether they were aware of any cases of trophic lesions of distant parts which were distinctly referable to the teeth? Then again he thought Prof. Horsley asked whether they were in the habit of noticing instances of pain referred to distant parts, but which was undoubtedly due to irritation in the teeth?

With regard to the first question, he had a very distinct recollection of a trophic lesion of that character in a girl who had suffered for many months from an ulcer of the cornea which had been treated without success by several surgeons. At last she applied to Mr. Nunn, at the Middlesex Hospital, who expressed an opinion that the ulcer was dependent on the delayed eruption of an upper canine tooth, and that it would disappear when the tooth was erupted, but not till then. And this proved to be the case, for when, in course of time, the canine was erupted, the ulcer disappeared.

With regard to the question of referred pain, he thought all must be familiar with the occurrence of painful spots due to dental irritation, but situated at a distance from the actual source of the mischief. Thus it was common to meet with a painful spot just in front of the ear in cases where the pulp of a molar tooth was exposed or pressed upon, or whilst it was being treated with arsenic. Painting the surface with tincture of aconite would often relieve the local pain.

The President had referred to cases of nerve irritation in which treatment, which subsequent experience had shown to be wrong, had nevertheless given relief. This brought to his mind the case of a man, aged forty, but looking many years older, all of whose upper teeth had been extracted for neuralgia of supposed dental origin, but with only temporary relief. The gum was then incised, and the bone drilled into, but without any good result. Mr. Henry Morris then cut down upon the infra-orbital nerve and stretched it. The pain again returning, he opened up the infra-orbital canal and removed the nerve as high as the spheno-maxillary fissure. On examining the nerve after removal, Mr. Morris found on it some small fibrous nodules similar to those drawn by Prof. Horsley. This operation gave relief to the patient which the previous ones had failed to afford.

He quite agreed with the statement made by the President that intermittent pain was rather characteristic of local mischief in the teeth than of a lesion in the nerve trunk, and that it could not therefore be relied upon in the way Professor Horsley had suggested as an indication of the mischief being deep instead of peripheral.

Mr. S. J. Hutchinson said that, following the President's example, he proposed to catechize Professor Horsley still further. He should be glad to know what was the exact nature and position of the changes which he found in the portions of nerve which he removed? Did he find any calcareous degeneration? Could he say that there was a distinct local change in the structure of the nerve from that which it would present in a healthy state? In the cases he had mentioned, was the pain confined to the inferior dental, or did it affect other branches of the fifth nerve? Was there in these cases any history of diseased teeth? And if the teeth appeared to be sound when removed, were any of them found to contain deposits of secondary dentine?

He thought that if a nerve became inflamed, the evidences of irritation would probably be more marked in that part which was contained in a rigid bony canal than they would be elsewhere. The branches of the fifth which gave rise to the most severe suffering, the infra-orbital and inferior dental, both passed through bony canals, and it seemed to be clear that there was no prospect of curing the neuralgia except by operating on the nerve above this part of its course. But what was the original cause of this irritation? Was it really peripheral or central? He was disposed to think that it was in most cases peripheral *at the outset*, and that it spread upwards, affecting the nerve higher up later on. It might arise from calcification of the tooth pulp, from pressure produced by the cicatrix after the extraction of a tooth (which had been shown by Prof. Gross to be a not uncommon cause of persistent neuralgia), or to irritation set up by decayed or misplaced wisdom teeth. Had Prof. Horsley met with any evidence which would lead him to favour this view?

Mr. Betts said he could adduce from personal experience evidence in support of the statement that peripheral irritation might cause pain far away from the actual seat of irritation. He suffered at one time from supra-orbital neuralgia irritation, which continued for six months in spite of medical treatment, and he was quite at a loss to account for it. At last an upper lateral incisor became tender. He had the nerve extirpated, and the neuralgia was at once cured.

Mr. Ashley **Barrett** remarked that there were two classes of cases in which it was common to meet with "referred pain." It was frequently met with in cases of decay in a wisdom tooth; the pulp might be actually exposed, yet the patient did not complain of pain in the tooth, but of pain in the neighbourhood of the ear or near the temporo-maxillary articulation. But if the tooth was extracted, the pain was at once relieved. The other class of cases were those in which a portion of the pulp of a sound tooth died, and gas collecting in the pulp cavity, exercised pressure on the living part of the pulp, and gave rise to pain at a distance, which might easily be attributed to some lesion of the trunk of the nerve.

Professor **Horsley**, having been called upon by the President for his reply, said he had first to express his thanks for the knowledge of many important facts which he had gained during the discussion. He had been invited to give almost a second paper; it was of course impossible for him in the time at his disposal to answer fully all the questions which had been raised, and he would therefore only refer to one or two points which he had not made clear.

First with regard to the undoubted fact that an operation upon the extremity of the nerve might give relief for a time, even though it evidently did not touch the seat of the mischief. The operation in this case might conceivably act in one of two ways. It might act by strong "counter-irritation" at the end of the nerve. Professor Gross' operation of drilling belonged, he thought, to this category. Or it might be, as Mr. Hutchinson had suggested, that in some of these cases the mischief began peripherally and extended upwards along the nerve, a creeping peripheral neuritis, which to judge by analogy was quite possible. If so, the successive extirpation of the peripheral portions of the nerve would give temporary relief.

The President had remarked that trophic lesions might be absent even in some severe cases in which the nerve trunk was involved. He was aware of this,—it had been so in one of his own cases,—and he had no explanation to offer.

It was of great interest to him to learn that the severe pain due to inflammation of the pulp might be distinctly intermittent—suddenly and completely disappearing and then recurring again—presenting in fact the typical epileptiform character. This fact certainly increased the difficulties of early diagnosis considerably.

With reference to Mr. Hutchinson's question as to the condition of the teeth in his cases when they were extracted, he was sorry that he could give no information. The patients did not come under his notice until a long time after the teeth had been removed, in one case not till seven years after, whilst the shortest interval was three-and-a-half years. As regards the question raised with reference to the wisdom teeth, this was just one of the points upon which he came to ask for, rather than to give, information.

The cases mentioned by Mr. Stocken were extremely valuable; it was of great interest to him to learn that after so long a duration as nine years of suffering a severe case could be cured by drugs.

With respect to Mr. Storer Bennett's case of ulcer of the cornea, he was aware of many published cases of disturbances of distant parts produced by peripheral irritation, but not necessarily trophic. The question he wished to ask with regard to instances of trophic changes was, under what circumstances do these occur most commonly? If you have a case of severe neuralgia (so called) distinctly due to disease of the teeth, do you find trophic disturbance? He suspected that this would be answered in the negative.

Then again with reference to "painful spots." He was well acquainted with "referred pain"—indeed he had observed it in himself—but though this might be accompanied by a certain amount of local tenderness, there was not the extreme sensibility to local pressure which was met with in the cases of neuralgia of the nerve trunk to which he had referred.

As to the changes found in the portions of nerve which he had had removed, there was in all cases great overgrowth of fibrous tissue in the nerve, or what was generally called *sclerosis.* This lesion was evidently the result of chronic inflammation. He believed that the origin of the mischief was generally in that part of the nerve which was contained in the bony canal, and it was on that account that he proposed that the nerve should be divided and removed above that part of its course.

As to the possible causation of the disease he could not say anything; this was another of the points on which he sought information.

He would only add that the operation which he had described was not so severe as it sounded. In proof of this he would hand round a photograph of the second case taken five days after the operation, and showing the wound healed. Of course, without antiseptic precautions, these operations would be very formidable, and perhaps hardly justifiable, but thanks to the teaching of Sir Joseph Lister and others, the risks were not such as to cause much anxiety.

DENTAL STUDENTS' SOCIETY OF THE LONDON DENTAL HOSPITAL.

Ordinary General Meeting, October 10th, 1887.

F. CANTON, Esq., President in the Chair.

The minutes of the previous meeting were read and confirmed.

The following new Members were proposed bv Mr. Seymour seconded by Mr. Colyer: Messrs. J. Dunlop, F. Burton, G. G. Spray, A. B. Dalby, and F. V. Richardson.

The following gentlemen were then balloted for and elected members of the Society:—Messrs. D. A. Cormack, J. Norris, I. Cohen, E. Parsons, Duncan Marquis, E. L. Eskell, and A. Black.

On casual communications being called Mr. J. F. Colyer showed a model of the superior Maxilla of a man aged 30, exhibiting considerable loss of alveolus by necrosis on both sides, on the left side causing an opening from the mouth into the antrum.

Mr. G. Seymour showed a model with a supernumerary tooth *in situ* in the incisive region.

Mr. H. Williams showed an Odontome; also two cases of necrosis of parts of the lower jaw, and read notes of the cases. He also narrated a case of Neuralgia, due to exostosed stumps, which was completely cured by their extraction.

Mr. Mansbridge showed a dilacerated upper bicuspid tooth, from the mouth of a boy aged 10, which had caused a large non-inflammatory swelling, for which the tooth was removed.

The President then called on Mr. J. F. Colyer for his paper on "Gold Fillings."—See page 1018.

In the discussion which followed Mr. Woodruff spoke of some fillings which he had lately witnessed, in which ivory and gold pointed pluggers were respectively used. He also advocated the use of the electric mallet.

The President in the course of a few remarks deprecated the selection of any one method as being universally the best, and dwelt on the advisability of adapting the method of filling to each particular case.

Mr. Matheson advocated the use of phosphate linings for frail enamel, the combination of cohesive and non-cohesive gold for front teeth, the use of tin on cervical edges and the margins of frail cavities in the back teeth, and finally contrasted the merits of mallet and hand-pressure work.

The discussion was continued by Messrs. Seymour, Mansbridge, Bates, A. R. Colyer and Harsant. Mr. J. F. Colyer made a brief reply.

The President then returned the thanks of the Society to Mr. Colyer for his paper, Messrs. Williams, Mansbridge and Seymour for their Casual Communications, and Messrs. Woodruff and Matheson for their presence and contributions to the discussion.

He then announced that the next meeting would take place on Monday Nov. 14th, when Mr. J. H. Badcock would read a paper on "The Dentistry of the Past."

The meeting was then adjourned.

Dental News.

PASS LIST OF THE FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following gentleman passed the First Examination at the October sittings of the Examiners:—Mr. Edward J. Montague Hodgkinson, Clapham, London.

The following passed the final examination and were admitted Licentiates in Dental Surgery:—Mr. John A. Biggs, Glasgow; Mr. Thomas Wilson, Glasgow.

THE COST OF FALSE TEETH.

BOYNTON *v.* COMER.

This case which was tried at the Brompton County Court, before his Honour Judge Stonor, was an action brought by Mr. Charles Boynton, of Somerville, Nottingham-road Croydon, to recover 10 guineas money paid to defendant in respect of dental operations alledged to have been improperly performed.

Mr. C. C. Scott, instructed by Messrs. Stonham and Son, of Philpot-lane, appeared for the plaintiff. The defendant appeared on his own behalf.

Mr. C. C. Scott, in his opening remarks, said this was a claim for 10 guineas paid by his client to the defendant in respect of an operation performed, and against that there was a counter-claim of eight guineas balance, alleged by the defendant to be due to him on account of that operation. In February the plaintiff had occasion to consult a Mr. Muller, of the American Dental Institute, and was introduced by him to Mr. Comer, the defendant. He had certain things done to his teeth, and in addition had two false ones fixed into his upper jaw on the American saddle bridge principle. During this Mr. Muller acted as Mr. Comer's assistant. For some time the teeth answered fairly well, but afterwards they caused him very serious inconvenience, and he was obliged ultimately to have them removed. In March the defendant sent in a bill for £24 3s., to which the plaintiff replied by sending him a cheque for 15 guineas. After further correspondence, and finding himself obliged to have the teeth removed, the plaintiff wrote to the defendant informing him that the dental work had turned out to be a failure, and that under the circumstances he must request him, the defendant, to refund him 10 guineas. The question in this case was whether this particular system of fixing the teeth was otherwise than useless.

Mr. Boynton was called and said that in February of this year he had been attending the American Dental Institute, where he saw Mr. Muller. He afterwards heard that he was at Mr. Comer's, where he was introduced to that gentleman, who subsequently stopped two of his teeth, and in addition placed two false teeth in his mouth, which he afterwards had to have removed.

The defendant then cross-examined the witness as follows:

Defendant—When you went to 78, Queens-gate, who did you call?

Witness—I called for your partner.

Defendant—Did you call for Dr. Comer?

Witness—No.

Defendant—Did you call for Dr. Muller?

Witness—No.

Defendant—Did you ask for my associate?

Witness—Not there, as it was not necessary.

Defendant—When you found the teeth did not answer, did you ever go back to 78, Queen's-gate, to consult with me with regard to them?

Witness—No, I did not; I thought the price was exorbitant, and after receiving that insulting letter from you I did not choose to.

His Honour remarked that this was only wasting time; the experts evidence had better be taken.

Mr. S. T. Silvester, of North End, Croydon, Licentiate of Dental Surgery, Royal College of Surgeons, (England), was then called and examined by Mr. Scott.

Mr. Scott—You are a dentist and in practise I believe?

Witness—Yes, since 1859.

Mr. Scott—Where you consulted by the plaintiff?

Witness—Yes.

Mr. Scott—Having regard to the state of the plaintiff's jaw, was that the proper mode of attaching these teeth?

Witness—No.

Mr. Scott—Would you describe to his Honour what would happen?

Witness—Inflammation would take place, gradually at first, caused by the oscillation and the constant strain on the periosteum. Suppuration would ensue, ending in the consequent death of the tooth.

His Honour—Do you ever fasten teeth on in that way?

Witness—Sometimes; when they can be attached both ends it is good practice, but not to destroy a live tooth.

By Mr. Scott—In your judgment it is not a proper way for that class of work?

Witness—No.

Mr. Scott—The defendant claims 18 guineas for those teeth, is that a proper charge?

Witness—I should be pleased to do it for five.

His Honour (to the defendant)—Do you wish to ask the witness any questions?

The Defendant—I don't think it is worth while.

In his defence the defendant denied responsibility. He said the complainant never consulted him, and the work was done by Mr. Muller.

His Honour—You acknowledge the responsibility when you send in the bill.

George Cox, footman, was called by the defendant to show that when complainant called at 78, Queen's-gate, he asked for Mr. Muller, but his Honour declined to take his evidence, and found for the plaintiff on his claim, and also on the counter claim, with costs. Judgment in a fortnight.—*The Croydon Advertiser and Surrey County Reporter.*

[N.B.—The Dentist's Register, 1887, does not contain the name of either "Dr." Comer or "Dr." Muller as in practice in London. Ed. B. J. D. S.]

Correspondence.

To the Editor of the "British Journal of Dental Science."

SIR,—I have read with much interest the letter of "Molar," in your issue of the 15th inst.

If he is a member of the British Dental Association, I should like to make his acquaintance, and would be very glad to hear from him; if he is not a member, I should like to invite him to become a member. One of the main purposes of the B.D.A. is "to maintain the honour and interests of the Dental profession." It is all very well "to look to those of greater standing in the profession," &c., we must do something more than look. Are we prepared to support them? to stand by them? to make some personal affort, and, if need be, some sacrifice of time, money and labour, to promote "this important end?" If "Molar" and all who think with him would lend their personal assistance, so as to make the B.D.A. a strong, and thoroughly representative body, say of 1500 members, it would not be difficult to "start some movement," meanwhile there are many within the B.D.A. as hungry for action as ever "Molar" is, but unable to act effectively, because so many more content themselves with an occasional growl in the Journal, but do not come forward with personal aid. I should like to make the acquaintance of any one who is willing to put his shoulder to the wheel.

Yours very truly,

W. H. WAITE.

10, Oxford Street, Liverpool.

["Molar" would probably like to learn, before joining the B.D.A., whether that body rigorously exclude advertising dentists (since he owns he is one), and what measures the B.D.A. propose to adopt to check the practice, both among its members and outside its range of jurisdiction, *i.e.*, among non-members. ED. B.J.D.S.]

ANSWERS TO CORRESPONDENTS.

MR. HENRI WEISS.—Many thanks, we will publish it in our next issue, it reached us too late for the present issue.

MR. PARTRIDGE.—We cannot publish your circular, our papers are exclusively for matters interesting to the profession at large, and not for personal explanations or confessions.

COMMUNICATIONS HAVE BEEN RECEIVED FROM—W. H. Waite, Liverpool; Mr. Willoughby Weiss, London; "Molar;" Mr. Herbert Williams, London; Mr. Kennedy; Mr. Christopher Heath; Mr. Campion, Manchester; Mr. Morton Smale, London; The Secretary of the Odontogical Society of Manchester.

British Journal of Dental Science.

No. 476. LONDON, NOV. 15, 1887. Vol. XXX.

INAUGURAL ADDRESS DELIVERED AT THE OPENING MEETING OF THE MANCHESTER ODONTOLOGICAL SOCIETY.

By Henry Planck, Esq., L.D.S., Ire.

Our Secretary has sent us notice that the President will this evening deliver his inaugural address.

Now, Gentlemen, I find the term "inaugural address" to be very formidable. Indeed, it is quite alarming to a man of my modest intellectual attainments. So that I should have been pleased if a more unassuming title could have been used to describe my duty this evening.

I am the more diffident as to my ability to adequately perform the duties of your President, because I remember that Dr. Parsons Shaw, who presided over us during the past year, is a man of great intellectual power and activity, and I feel that the contrast between his great mental gifts and my own most modest attainments cannot fail to be painfully apparent to you.

However, it is my duty to uphold to the utmost of my ability the dignity of our profession ; and I am comforted by the belief that I shall have in you a most kind and appreciative audience.

In most scientific societies the President's Inaugural Address usually takes the form of a resumé of recent scientific progress. It is not my intention to offer you an entertainment of that nature, because I think such an address could not possess any abiding interest for you ; and, besides, I want to say a few words upon a subject which has occupied my mind for many years. That is, upon the propriety of a provision of the Dentists' Act of 1878.

This is a subject which can hardly fail to interest you, for the Dentists' Act is a most precious document to the dentist. It is the charter which establishes and maintains his professional position, his professional liberties and privileges, and every dentist ought to be well acquainted with each section of this, to him, most precious Act of Parliament. I myself, as an old dentist, am most proud of the Dentists' Act. And yet it is after all the work of men's minds, and therefore, I need hardly tell you, it is not beyond criticism.

For example, who can explain, who can justify the unique, the extraordinary position of the legally qualified medical practitioner under the Dentists' Act?

I want to put this matter very plainly before you, so we will first consider :—Is the legally qualified medical practitioner entitled to be on the Dentists' Register, or is he not? Is he entitled, in the words of the Act, to use the name of dentist or any name implying that he is a person specially qualified to practise dentistry?

This question is a matter of contention, different people take different views upon this subject, and so I know I cannot discuss it without offending some people's opinions, but surely if I use only moderate and temperate language I can lay my views before you without just cause of offence to the medical dental mind.

And now, Gentlemen, let us consider. Is the legally qualified medical practitioner entitled to be on the Dental Register?

In order to answer this question we must turn to section 6 of the Act This section treats of the qualification necessary for registration. I will now read section 6 of the Act :

"Any person who"

"(*a*) Is a licentiate in Dental Surgery or dentistry of any of the medical authorities ; or

"(*b*) Is entitled as herein-after mentioned to be registered as a foreign or Colonial dentist ;" or

"(*c*) Is at the passing of this Act bonâ-fide engaged in the practice of dentistry or dental surgery, either separately or in conjunction with the practice of medicine, surgery, or pharmacy.

"Shall be entitled to be registered under this Act"

You see the legally qualified medical practitioner is not entitled to be on the Dental Register. His name, his title is not mentioned in this section. Now let me turn to section 3 of the Act.

"From and after the first day of August, one thousand eight hundred and seventy-nine, a person shall not be entitled to take or use the name or title of 'dentist' (either alone or in combination with any other word or words,) or of 'dental practitioner,' or any name, title, addition, or description implying that he is registered under this Act, or that he is a person specially qualified to practice dentistry, unless he is registered under this Act."

"Any person, who, after the first day of August, one thousand eight hundred and seventy-nine, not being registered under this Act, takes or uses any such name, title, addition, or description as aforesaid, shall be liable, on summary conviction, to a fine not exceeding twenty pounds; provided that nothing in this section shall apply to legally qualified medical practitioners."

Thus you see the legally qualified medical practitioner, though not on the Register, yet occupies a position outside, beyond and above the reach of the penal section of the Act.

Now we will consider section 5 of the Act.

This section treats of the privileges of registered persons.

"A person registered under this Act shall be entitled to practise dentistry and dental surgery in any part of Her Majesty's dominions, and from and after the first day of August, one thousand eight hundred and seventy nine, a person shall not be entitled to recover any fee or charge, in any court, for the performance of any dental operation, or for any dental attendance or advice, unless he is registered under this Act, or is a legally qualified medical practitioner."

Again, you see, the legally qualified medical practitioner, though not on the Dental Register, enjoys the same privileges under section 5 as the registered dentist. Indeed, the legally qualified medical practitioner enjoys all the privileges of the registered dentist, and yet he is not allowed to place his name on the Register. In order to put my point more forcibly before you, I will now read a part of section 3 in an abbreviated form. This is in effect what the section says: "a person not registered under this Act, who takes any title implying that he is a person specially qualified to practise dentistry, shall be liable on summary conviction to a fine not exceeding twenty pounds, provided that nothing in this section shall apply to legally qualified medical practitioners." Thus it is evident the legally qualified medical practitioner may take a title implying that he is a person specially qualified to practise dentistry without rendering himself liable to the penal sections of the Dentist Act.

Now, gentlemen, just consider this matter with me for a few minutes. Is the legally qualified medical practitioner a person specially qualified to practise dentistry, or is he not? One view or the other must be correct. I think we may accept that proposition as indisputable. If he is such a person, then why is he not entitled to be on the Dental Register under this Act?

If he is NOT a person specially qualified to practise dentistry, why is he specially exempted from the penal sections of the Act?

If he is specially qualified, a great injustice is done to him, for he ought to be entitled to be registered.

If he is not specially qualified, then why is he exempted from the penal sections of the Act?

In this case, his exemption is an injustice to the public, for whose protection this Act is provided.

Again, if the legally qualified medical practitioner is a person specially qualified to practise dentistry, then surely there is no need whatever, for the Dentists' Act. There is no need for new schools, new examinations and new titles.

Thus you see the position of the legally qualified medical practitioner under the Dentists' Act seems to be beyond justification and altogether inconsistent with common sense and justice.

It matters not to my argument so far as I have gone *whether or no* the legally qualified medical practitioner is a person specially qualified to practise dentistry, for in either case his position under the Dentists' Act, cannot be justified.

But now, perhaps, I may be permitted to express an opinion upon that question.

In the practise of dentistry there are two main departments or branches. One is called the operating department. The other the mechanical department.

Each of these two departments is in itself quite a special art requiring a long and careful training and study. How varied and interesting is the work of the operating dentist.

Let me say a few words about the operation of stopping teeth. What a beautiful and interesting and useful operation it is. What excellent manipulative power it requires. What a long training, what patience and experience are required to make a good gold stopper.

Now, let us consider, what does the legally qualified medical practitioner know of this art? What does he know about the dental engine, the various dental mallets, the excavator, the rubber dam and all the varied appliances required by the operating dentist? He has not been taught the art. He has had no experience. He has had no examination, and I think it is a fair and accurate statement to say he knows nothing at all about it.

Now let us turn to the Mechanical Department. How varied and interesting is the Mechanical Department of the Dentists' art. Each case is in itself a separate study. Great mechanical aptitude and extreme patience and perseverence with large experience are necessary to acquire a mastery of the Mechanical Department of Dentistry. Candidates for the Dental Diploma are required by the various examining authorities to produce a certificate of having been engaged during a period of not less than 3 years in acquiring a practical familiarity with the details of Mechanical Dentistry. Now, Gentlemen, what does the legally qualified medical practitioner know about the Mechanical Department of Dentistry. I say he knows nothing at all about it. He has not been engaged during a period of 3 minutes, much less 3 years, in acquiring a practical familiarity with the details of Mechanical Dentistry. He has had no training, no experience, no examination as a dentist. He is not familiar with the file, the pliers, or the blow-pipe of the mechanical dentist.

He does not know how to take a model of the mouth or how to make a plaster cast. He cannot make a plate or a band. He cannot mount teeth in vulcanite. He knows nothing about continuous gum work or the many modern refinements of mechanical dentistry. And, again, I think it is a fair and moderate thing to say, He knows nothing at all about it.

And so I sum up my argument with the expression of a strong opinion that the legally qualified medical practitioner is not a person specially qualified to practise dentistry, and he ought not to be lawfully entitled to take the name of dentist He ought not to be exempt from the penal section of the Dentists' Act.

To be sure, I freely admit that the legally qualified medical practitioner is a highly educated man. His mind is fully stored with medical and surgical knowledge ; he is a most valuable member of society and worthy of all honour and respect.

But for the purpose of my argument, I have to show only what he does not know, and I say again and again, he knows nothing about the practical work of the dentist, and he ought not to be exempted from the penal sections of the

Dentists' Act. It is generally admitted that men do not act without a motive; what then is the motive which moved the minds of the men who provided this extraordinary exemption? I do not seek for an unworthy motive. I prefer to believe that the men who advised and assisted in the drafting of the Dentists' Act were honourable men and of the highest professional character; and I am confident they must have felt themselves justified in exempting the medical man from the penal section of the Act. But their motive, their reason, their justification for this exemption are not apparent to me. I think I am a fair minded man, and I have tried hard to find a justification, a reasonable explanation of this provision. I have tried to look at the matter from the point of view of those men who differ from my opinion, and I can only say I cannot find any reason, any explanation worthy of the consideration of any man who understands the question.

To be sure the medical man has a knowledge of anatomy and physiology, but these branches of science form only a small part of the education of the dentist, and cannot be held sufficient to place the medical man in the position of a person specially qualified to practise dentistry.

Again, it may be said that under the old régime, when there was no law upon the subject, the legally qualified medical practitioner was looked upon by some people as the only person legitimately entitled to use the name of dentist, and therefore he ought not to be deprived by the new law of the advantage he then possessed.

But such an explanation is not to be accepted for a moment; for, indeed, the medical man lawfully occupied no better position in this matter than any other man. Any man in the United Kingdom could at that time lawfully take the name dentist; all alike were lawful dentists if they chose, and the medical man no more so than anyone else.

I think I have placed this subject before you in a fair and simple manner. I have used only simple words and fair arguments, which any man may understand, and I now leave it for your consideration. I put the matter before you as a question which calls for an honest sensible answer. Why is the legally qualified medical practitioner lawfully entitled to take the name of dentist or any name implying that he is a person specially qualified to practise dentistry? I shall be pleased indeed if a proper answer can be found to this question. It is my firm impression that no satisfactory answer can be found.

I have gone very fully into this question as a matter of abstract right, because I know it is a question which greatly moves the minds of many dentists. But after all, I must tell you I think the grievance is purely sentimental. As a practical grievance it is not worth a snap of the fingers. For, indeed, I do not suppose a legally qualified medical practitioner will ever be found to take advantage of this legislative *lapsus*; that is, to take the name of dentist without first obtaining the dental diploma.

If any medical practitioner should ever be guilty of such a breach of professional decency I think his most improper conduct would bring its own punishment. I say the finger of scorn would be pointed at him alike by dentists and medical men. He would be recognised as the most dangerous form of dental quack, for he would be using his medical diploma as a cloak to hide his dental ignorance. He would be, indeed, a dental wolf in sheep's clothing; and therefore more dangerous, more to be despised than the common vulgar every-day quack, who appears as a wolf in the garb of a wolf, and is therefore less mischievous, because he is so easily recognized.

In order to lay my mind fully open before you upon this subject I must ask your further attention for one or two minutes.

In the ranks of our profession are found many men hold a medical diploma in addition to a dental diploma.

These men are said to have a dual qualification, amongst them are found many of the distinguished heads of our profession. Men who lend grace and dignity to the name of dentist.

I say all honour to such men, many of them are highly accomplished practical dentists, and I speak of them only in terms of honour and respect.

Some persons there who claim for the dentist with a dual qualification, a position of professional superiority, but such a profession cannot be accepted for one moment. For if the dentist having a dual qualification is a superior kind of dentist then it follows that the man holding only the Licentiate in Dental Surgery is an inferior kind of dentist. Such a comparison is altogether odious to my mind.

And, besides, it amounts to a tacit admission that the authorities who have provided the dental education and examination have greviously failed in their duty, and that the dental training examination established by law provides only an incomplete, and insufficient, and inferior dental education.

Now I entirely refuse to accept that position for one moment, and I assert that the possession of the dual qualification justifies no man in assuming a position of professional superiority over the dentist holding only the dental diploma.

I freely admit, however, that in the public opinion a medical diploma elevates and strengthens and adorns the professional status of a dentist, and for that rerson the dual qualification is of great practical value to a dentist and is much to be desircd, and, therefore, I strongly recommend all young dentists who have the intellect and the opportunity to obtain a medical diploma. I should be happy and proud indeed, if I possessed one.

Now, if I have not quite exhausted your patience, I want to say a few words in praise of the Manchester Odontological Society, I want to direct your attention to the very important assistence such a society affords to the dentist who wishes to occupy a front place in the ranks of his profession.

By means of this Socieiy the whole body of the dentists in this district are enabled to meet together periodically as a band of professional brethren, each one being anxious to impart to his brethren dentists the best of his professional knowledge and skill, and every one being preparsd and anxious to receive instruction.

One of the most important results of our meetings is found in the opportunity afforded to each of us for the public discussions of the various interesting professional papers which are read before us.

In my opinion public speaking affords a most valuable mental exercise.

It strengthens the memory, it enables a man to give intelligent and orderly expression to the ideas which often throng the mind of the most intellectual man in crowded confusion.

To speak well in public, that is to speak fluently, without hesitation, without repitition, and in well chosen elegant and powerful language is a most valuable accomplishment, and cannot fail to elevate and adorn the character of any man.

Let us then, each of us, during the coming session of our Society, avail ourselves of the opportunity afforded at our meetings for cultivating this most valuable and elegant accomplishment.

Some men there are who speak more than is either wise or desirable ; happily we have no instance in our Society of this superabundant loquacity, but we have unfortunately many who err on the other side, who practically take no part in our discussions.

Many wise and witty things have been said about the folly of excessive talking, and the wisdom of brevily in speech is proverbial on the other hand excessive loquacity is not held to be a sign of wisdom, nor is it often a cause of pleasure to the listener.

A very wise and witty man has said, in reference to the nuisance of excessive loquacity :

"If we might perpetrate at the same time a pun and a paradox, we should affirm that the smaller the calibre of the mind the greater the bore of a perpetually open mouth."

Happily we have no bore of this kind amongst us, our great difficulty is rather all the other way. Shakespeare tells us that "brevity is the soul of wit," and some members of our society seem to think that silence also is the soul of wit.

We all know the old latin proverb, "vir sapit qui pauca loquiter." You observe, gentleman, "pauca loquiter" not "nulla loquiter." Surely never to speak at all cannot be a sign of wisdom.

Let us then, each one of us, determine in the coming session to take our part in discussing the subjects which are brought before us.

If we make our discussions able and interesting so, and in like degree shall we establish and strenghen the position of our society.

Then we shall become a power and an authority in our little professional world.

Then indeed, shall we, each one of us feel that it is an honour and a great priviledge to be a member of the Manchester Odontogical Society.

A Cement for Celluloid.—A good cement for celluloid is made, says the *Scientific American*, from one part shellac dissolved in one part of spirit of camphor and three to four parts of ninety per cent. of alcohol. The cement should be applied warm, and the broken parts securely held together until the solvent has entirely evaporated.

LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Professor of Surgery and Pathology.

LECTURE III.—Diseases of the Temporo-Maxillary Articulation and Closure of the Jaws.

(*Continued from page* 1010).

Closure of the Jaws may be conveniently divided into temporary or spasmodic, and permanent due to contracted cicatrices or ankylosis of the joint.

Spasmodic Closure of the Jaws, which may be of several weeks' duration, is almost invariably connected with the eruption of the wisdom-teeth of the lower jaw. Owing to want of room between the second molar and the ramus of the jaw, or owing to some malposition of the tooth itself, the wisdom tooth is unable to assume its normal position, and by the pressure which it exerts on the neighbouring structures, sets up irritation, which induces a state of tonic spasm of the masseter and internal pterygoid muscles. This fact has long been known to dental surgeons, and is especially alluded to by Mr. Salter in his essay on "Surgical Diseases connected with the Teeth."

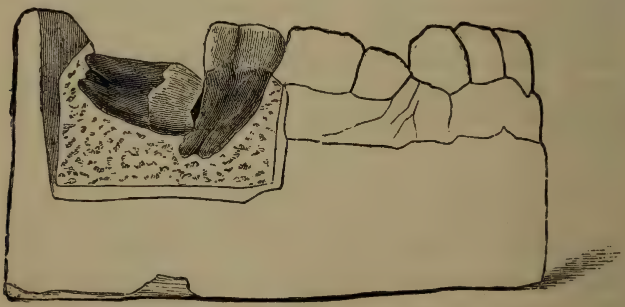

Fig. 51.

The accompanying engraving (Fig. 51), for which I am indebted to Mr. Felix Weiss, shows the condition of parts found by him in a gentleman, aged 43, who suffered long and severely from pain and spasmodic closure of the jaws, due to the irritation caused by the wisdom-tooth lying imbedded horizontally in the alveolus, and pressing against the fang of the second molar. It was only after the extraction of the second molar that the wisdom-tooth was found and removed, with complete relief of the symptoms.

The majority of these cases occur about the age of 20, when the eruption of the wisdom-tooth is to be expected, and and the diagnosis is readily made. The treatment is obvious. The mouth must be opened, under chloroform, by a screw gag, or by a spiral screw wedge of boxwood, and either room must be made for the wisdom-tooth by extracting the second molar, or, if it can be reached, the wisdom-tooth itself may be removed.

The impeded eruption of wisdom-teeth gives rise to various and apparently anomalous symptoms, which are often not traced to their true source, such as persistent neuralgia, not always referred to the part involved ; but the most serious result is the formation of abscesses, which burrow widely about the angle of the jaw and cheek, leading to great scarring and permanent deformity. In a young lady, seen by me in consultation some months back, the mischief resulting from an impacted wisdom-tooth was sufficient to put her life in some jeopardy, and has left her face permanently scarred by extensive abscesses.

Permanent Closure of the Jaws.—Cases of permament closure of the jaw from cicatrices within the mouth, etc., are not of very rare occurrence ; but their description and treatment seem to have been very generally neglected by modern English authors.

By far the most complete account of this affection is given by Dr. Samuel Gross, or Philadelphia, in his large work on surgery, from which I take the following quotation :

" *Ankylosis, or Immobility of the Jaw.*—This distressing affection, which may be produced in a variety of ways, may exist in such a degree as to render the patient entirely unable to open his mouth or to masticate his food.

" The most common cause, according to my observation, is profuse ptyalism, followed by gangrene of the cheeks, lips, and jaw, and the formation of firm, dense, unyielding, inextensile tissue, by which the lower jaw is closely and tightly pressed against the upper. Such an occurrence used to be extremely frequent in our south-western States during the prevalence of the calomel practice, as it was termed, but is now, fortunately, rapidly diminishing.

"Children of a delicate, strumous constitution, worn out by the conjoint influence of mercury and scarlatina, measles, or typhoid fever, are its most common victims; but I have also seen many cases of it in adults and elderly subjects. In the worst cases there is always extensive perforation of the cheeks, permitting a constant escape of the saliva, and inducing the most disgusting disfigurement.

"Secondly, the affection may depend upon the ankylosis of the temporo-maxillary joints, in consequence cf injury, as a severe sprain or concussion, or arthritic inflammation, leading to a deposition of plastic matter, and the conversion of this substance into cellulo-fibrous, cartilaginous, or osseous tissue. I have met with quite a number of such cases, several in very young subjects.

"Thirdly, the immobility is occasioned by a kind of osseous bridge, extending from the lower to the upper jaw, or from the lower jaw to the temporal bone; such an occurrence, however, is not common, and is chiefly met with in persons who have suffered from chronic articular arthritis.

"Finally, immobility of the jaw may be caused by the pressure of a neighbouring tumour, especially if it occupies the parotid region, so as to make a direct impression upon the temporo-maxillary joint."

I must now refer to an essay by Dr. Frederick Esmarch, Professor of Surgery in the University of Kiel, on "The Treatment of Closure of the Jaws from Cicatrices,"* in which he investigates the pathology of the affection, and describes an operation for its relief by the formation of an artificial joint in the lower jaw—an operation which has given most satisfactory results in cases under my own treatment.

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* Die Behandlung der narbigen Kieferklemme durch Bildung eines küntslichen Gelenkes um Unterkiefer. Kiel, 1860.

This proposal of Professor Esmarch to form a false joint in front of the cicatrix was suggested to him by a case which came under his care in 1854, in which considerable destruction of the cheek and contraction of the cicatrix had occurred, together with immobility of the lower jaw and necrosis of a portion of it. The bone having been removed, it was found that mobility was restored, and a useful amount of movement obtained. Professor Esmarch therefore suggested, at the Congress of Göttingen, in 1855, the removal of a piece of bone in cases of contracted cicatrix; but did not happen to meet with a case suitable for the operation until after it had been successfully performed by Dr. Wilms, of Berlin, in 1858, shortly after which he himself operated upon at a case at Kiel, and with the best results. The operation was subsequently performed by Dittel of Vienna, and by Wagner of Königsberg.

Shortly after this proposal of Esmarch, it would appear that Professor Rizzoli, of Bologna, quite independently conceived a somewhat similar idea, but modified the proceeding by merely cutting through the jaw, without removing any portion of bone. He operated in this way first in 1857, and subsequently had three other successful cases. In Rizzoli's cases no external incision appears to have been made, but the section was accomplished from the mouth with powerful forceps. This proceeding has been followed by Professor Esterle, from whose essay in the *Annali Universali di Medicina* I have extracted these particulars.

Esmarch's operation appears to me to possess a decided advantage over that of Rizzoli, in the fact that a piece of bone is removed, by which the formation of a false joint is facilitated, as we know by experience in cases of resection of the elbow, etc.; and the external incision can never be a matter of any importance, whilst it admits of the application of the saw, and so avoids risk of splintering the bone.

Mr. Mitchell Henry was, I believe, the first surgeon to put Esmarch's operation into practice in this country, he having performed it a few weeks before myself. The patient was a female, on whom a variety of operations had been performed (among others, division of the masseter), and whom I had had under my own care at the St. George's and St. James's Dispensary, two years before, when I divided the cicatrices freely, and screwed the mouth open, but without permanent benefit. Mr. Henry employed the chain saw, and removed about half an inch of bone. The patient, unfortunately, sank a few days afterwards, apparently from pyæmia and exhaustion. In my own cases I used an ordinary narrow saw, in preference to the chain, and was enabled to remove sufficient bone to give free movement, through a small incision along the edge of the jaw.

The subject of the contraction of cicatrices in the mouth, and their treatment, though it has attracted little notice among British authors, has, on the contrary, excited much attention in Paris, and has furnished the topic of frequent discussions at the Société de Chirurgie. Since the date of the publication of a paper upon the subject by M. Verneuil (*Archives Générales*, 1860), several operations have been performed by French surgeons, but apparently with but little success, since in cases operated on both by the method of Esmarch and of Rizzoli reunion of the divided jaw has taken place.

Thus, on February 4th, 1863, M. Boinet brought before the Society a little girl on whom he had previously performed what he terms Esmarch's operation (but which appears to have consisted in the simple division of the jaw, recommended by Rizzoli, and not the removal of a wedge of bone, as originally proposed by Esmarch), and in whom the bone had reunited. M. Deguise thereupon quoted a case in which he had removed a centimètre and a half of bone with the same unsatisfactory result, and expressed a doubt whether a single successful case could be produced. On Feburary 11th, 1863, M. Deguise brought the case he had alluded to before the Society, and showed that the failure "depended upon the formation of an osseous callus at the level of the resected portion." At the same meeting M. Bauchet showed a young Syrian girl in whom contraction of the left side had taken place, together with a loss of substance of the cheek and commissure of the lips, equalling a five-franc piece in size. In this case a centimètre and a half of the jaw was removed ; and though extensive suppuration and necrosis of the jaw ensued, the girl made a good recovery, and at that date (February 4th) a very satisfactory amount of movement and power of mastication had been obtained.

On July 29th, 1864, M. Verneuil communicated to the Société de Chirurgie the histories of several cases operated upon by M. Rizzoli himself, the results of which were most satisfactory. In the first, the operation (simple division of the jaw from within the mouth) was performed in 1857, and after six years the boy was able to eat solid food most satisfactorily ; the second case, operated upon in the same year, was equally good. In the third case, operated upon in 1858, the mouth could not be widely opened, and the child had some difficulty in speaking. The fourth case, operated upon in 1860, was most satisfactory. M. Verneuil also mentioned a fatal case which occurred in M. Rizzoli's practice, and alluded to my paper in the *Dublin Quarterly Journal* of May, 1863.

It would appear that M. Rizzoli had adopted the plan of inserting a foreign body, such as a piece of gutta-percha, between the cut surfaces of bone, with the view of preventing their reunion, and the possibility of doing this was roundly denied by one of the speakers at the Société de Chirurgie. There appears to me, however, to be no difficulty in effecting this, provided the section be made from within the mouth and without external incision, as proposed by M. Rizzoli, but I cannot speak with certainty, having no experience of his operation.

One observation of M. Verneuil's is, I think, worthy of notice—namely, that all Rizzoli's successful cases have been examples of contraction within the mouth without loss of substance of the cheek, whereas the unsuccessful cases of the operation which had occurred in Paris had suffered considerable damage in the soft tissues ; and he suggests that in these cases Esmarch's operation may be more properly applicable. In one of my cases the loss of substance in the cheek had been replaced by a dense cicatrix, which it would have been unwise to interfere with from within the mouth, and at the same time, owing to its firm contraction, it would have been impossible to have performed Rizzoli's operation in the way he recommends—namely, without any external incision. I therefore resorted to Esmarch's proceeding, with the results of which I have every reason to be satisfied.

(*To be continued.*)

NOTES FROM FRANCE.

ACADEMIE DE MEDECIN OF PARIS.

By an Occasional Correspondent.

Discussion on M. Verneuil's Paper on Imaginary Ulcerations of the Tongue.

M. **Hardy** states that he has observed this affection more frequently in persons of a neuropathic rather than among those of an arthritic temperament. With M. Pourvier, he holds that the buccal hyperæsthesia may be looked upon as the forerunner of ulterior nervous affections. M. Hardy has often met with this affection among syphilitic people who had undergone a long course of mercury. He believes that this neurosis, this hyperæsthesia may be brought about by taking too much mercury. It is a malady which is not easily amenable to treatment, and it may give rise to monomania. With regard to treatment, M. Hardy recommends the exhibition of alkalies, painting with glycerine of carbolic acid, and arsenical preparations. The best remedy, however, is time.

M. Luys has met with this affection among hypochondriacs, or as a premonitory symptom of general paralysis, or also as a concomitant of various localised neurotic affections. M. Luys looks upon time as the best remedy. He also recommends a course of hydrotherapy.

M. Besmeir believes that this affection has already been described under the name of glossodynia, and stated to be a possible forerunner of some nervous affection.

M. Verneuil read a note from M. Diday, of Lyons, in which he stated that in the cases of imaginary lesions of the tongue which he has met with, the posterior third of one of the borders of the tongue has usually been referred to as the seat of the affection. In most cases these imaginary ulcerations are, by those who believe themselves to be the subjects of them, regarded as syphilitic manifestations. The best course to pursue is, therefore, to avoid both mercury and the iodides. It is preferable to restrict oneself to local sedatives and to treatment.

M. Verneuil does not believe that surgical measures should be absolutely proscribed.

M. Albarran, finds as the results of his researches into the development of the teeth between the third and seventh year, that the permanent alveolus has no connection whatever with the alveolus of the milk teeth which becomes altogether removed just as happens with the whole portion of the maxilla which is intermediary between the two alveoli ; the rising of the tooth is brought about much more by the covering of the alveolar portion of the maxilla, than by the actual rising of the tooth. The alveolo-dental periosteum is nothing more than an ordinary ligament formed like all ligaments of connective tissue. The process by which milk teeth are destroyed is ordinary osteitis.

TREATMENT OF CATARRH OF THE ANTRUM.

At the Société Francaise d' Odontologie et de Laryngologie.

M. Schiffers of Liege, related a case of catarrh of the antrum, in connection with which he remarked that the diagnosis of this affection is easy, if the discharge from the nose is fœtid uninlateral and intermittent.

The treatment he suggested for this form of catarrh consists in the introduction of a grooved director into the opening of the antrum, along this a long stem ending in a blunt pointed bistoury is slipped so as to make several lateral incisions, with the object of increasing the size of the aperture, and thus rendering possible the washing out of the cavity. Instead of a bistoury, the galvanic cautery may be used. In support of his views, M. Schiffers mentioned the case of a patient whose teeth were not affected though he was suffering from catarrh of the sinus maxillaris. He was of opinion that this form of catarrh was not usually due to a disease of the teeth.

M. Baratour, of Paris, held a different opinion. He had met with thirteen cases of catarrh which were all dependent upon some dental affection, the teeth were looked after by some of his dental confrères who removed the roots and made an opening into the antrum through the sockets of the teeth. In this way they were enabled to wash out the antrum and to bring about a speedy cure. He believes that in most cases this disease has its starting point in some form of dental lesion.

M. Chatetet, of Paris, believes in the nasal origin of catarrh of the antrum, for at a *post mortem* of a patient who suffered from this affection, he found widely dilated nasal cavities, together with pus in the left antrum and sphenoidal sinuses.

M. Noguet of Lille and M. Fazel admit the dental origin of the disease.

M. Boucheron of Paris, recounted the history of the catarrh of the antrum with which Louis XIV. was affected and which had its starting point in a decayed tooth.

M. Vacher was of opinion that cold alone was a sufficient cause of catarrh of the antrum.

M. Poyet prefers making his injections through the alveolus rather than through the nose. The chairman, Dr. Gongenbeim, in summing up remarked that if so few cases of catarrh of the antrum due to caries of the teeth, come under the notice of medical men it is owing to the fact that patients with this affection usually repair to dentists.

ACADEMY OF SCIENCES OF PARIS.

At the June meeting, M. Leboir gave a summary of his researches into the nature and pathological anatomy of buccal leucoplasia (psoriasis buccalis). This affection which at the onset is hyper-keratinising in its nature, tends to become de-keratinised under the influence of sundry causes, among which the irritation due to the formation of the fissures and ulcerations plays a most important part. This irritation also occasionally leads to the growth of papillomatous excrescences which are prone to degenerate into epitheliomata. For this reason, at the onset especially, de-keratinising agents particularly salicylic acid are indicated for the treatment of this affection. When fissures have formed, local topical applications must be made in order to get them to heal.

British Journal of Dental Science,

LONDON, NOVEMBER 15th, 1887.

WHY WE DON'T ADVERTISE.

Among ethical questions, there are few which possess at the same time greater interest to professional men, and offer greater difficulties, than that of the admissibility of advertising. It is a mere quibble to say all professional men advertise ; doorplates, visiting cards, signed articles in the journals may be considered advertisements, but such means for making oneself known cannot come under the bann of even the most scrupulous anti-advertiser.

Advertising proper, consists in issuing commercial announcements in the lay press ; intimating for example that Mr. So-and-so does on such-and-such days see patients at certain times and places ; extolling the value of Mr. Blank's painless system, or worst of all, issuing catch-penny announcements headed " Teeth ! Teeth ! Teeth ! " and continuing in the same vulgar strain to the effect, that Messrs. Pullemout and Smashem are prepared to supply whole sets for the modest fee of *One Guinea, Best Quality of Mineral Teeth,* guaranteed ! Of course the chamber of horrid advertisements—and we possess a large, varied and really surprising collection —contains many gradations in atrocrity of diction and " turn out." The lower types such as we have instanced above are, perhaps, less dangerous than the insidious " puffs " of those gentry, who in a seemingly modest way, announce that some bogus tooth shop, grandiloquently termed an " Odontal Emporium", or some such ilk, is open daily between 10 and 4 and is attended by be-doctored dentists who are not wholly innocent of sham colleges.

In "Thurley Tighe" Mr. Felix Weiss cleverly portraits the difficulties a struggling dentist experiences when staunch and loyal to his belief that advertising is discreditable, ungentlemanly and unprofessional, and yet sees the apparent success of his less scrupulous neighbours who disseminate handbills and rush into the unenviable publicity of the daily press.

The non-advertiser has much against which to contend, and in the case of those not blessed with private means, patronage or a snug certain practice, there must be very cogent arguments which satisfy them that reputable poverty is better than a stalled ox and advertising. The possession of five hundred pounds a year drawn solely by newspaper puffing is too strong an incentive to wrong doing for the impecunious to resist unless they see some extremely plain and patent reasons why they should refuse ignominy when savoured by a competent income.

And yet there are reasons plain enough why all men should refrain from touching the pitch of press advertisements. Let us consider the question purely from a worldly wise and common sense point of view. The men who advertise in the daily or weekly press never attain professional eminence, they are branded as so many mountebanks and hucksters. It matters little whether they belong to the class our correspondent "Molar" describes as honest, who do good work and take the liberty of announcing the fact in the daily or weekly press, or whether they are members of the many swindling concerns started to extort money out of the needy under pretext of giving *bona fide* good mechanical work at prices which would not cover the cost of the material; all these men go down into one category and neither the profession nor the public will for one moment believe in their honesty or *bona fides*. This being so, it follows that such men can never achieve a social position of respectability without which life to an intelligent thoughtful man is bereft of its main solace. Such men furthur do not, as a rule, achieve a great pecuniary success. The output of the cost of advertising represents a substantial income in itself, and as competition grows keener, so does the necessity for more lavish expenditure of this kind become imperative. Unless a man makes up his mind to become an out-and-out swindler, offering to do work for sums he knows cannot pay him, and so to make his own pocket safe, substituting materials and workmanship far below the standard he promises, and not stopping at such trifles as cases which an hopeless and irretrievable misfits, advertising really does not pay. If you are honest there is no short cut to prosperity; the best warranty for success is the character of your work and the conduct of your business. The argument so often brought up, others do it with impunity and benefit, why then shall I not do likewise? is the most hopeless of *non sequiturs*. Fagin and his pickpocket school might well deal in such sophisms, assuring some guileless wight that purse-lifting is a sure means of acquiring wealth and one which is rendered fully justifiable by the examples of kings and barons of olden time, and of promoters of bubble companies and "operators in differences" upon the modern stock exchanges. Honesty, even in these latter days of scoffing and sneers, still remains the best policy; and the man who has lived with clean hands and a lieless tongue will die a happier, if not a richer man than his shifty, mendacious neighbour.

ANNUAL DINNER OF THE PAST AND PRESENT STUDENTS OF THE NATIONAL DENTAL HOSPITAL AND COLLEGE.—Mr. Charles S. Tomes, F.R.S. will preside at the Students' Annual Dinner of the National Dental Hospital and College on Friday, the 25th November, at the Holborn Restaurant.

THE BALANCE SHEET OF THE B.D.A.—We are informed that this document, for which we instituted tender enquiries not long since, is *in posse* if not *in esse*. Its birth is premature, as its sponsors the auditors, are not elected until after the Annual General Meeting and hence the delay.

THE BRITISH DENTAL ASSOCIATION AND "ADVERTISING DENTISTS."—Mr. Waite suggests that all who like our correspondent "Molar" object to advertising by quacks, because it obliges (*sic*) them, the honest men, to advertize also, should join the B. D. A. Would Mr. Waite or some other prominent member of that august body tell us all about "Dr." Comer and "Dr." Muller. There are also one or two other "Drs." who are doing a "big thing" and it would be very interesting in the point of view of the profession to know what the B. D. A. thinks about them. If these gentry are not qualified according to the laws of England, are they going to be let off scot free, or are steps already being taken to serve the same sauce to un-English geese as has been dolled to the English ganders. The B. D. A. has done so much good in the past in petarding recalcitrants, that we feel sure it will come to the rescue now, and then "Molars" and all the smaller teeth will join it forthwith. *Nous verrons!*

THE DISCUSSION UPON COCAINE AT THE ODONTOLOGICAL SOCIETY.—At the last Meeting the, question again was argued Is Cocaine of any use to dentists? Several members spoke, but a long agenda sheet boycotted anything like a thorough discussion. The speakers were very decided upon two points, firstly, that cocaine is often very useful; and, secondly that even with much care, very awkward symptoms may follow its use. Curiously enough, one speaker was inclined to attribute most of the symptoms usually laid to the charge of the alkaloid, to "blue funk." His contention appeared to amount to this, if your patient says she feels faint, and you rush for smelling salts, nitrite of amyl, and so on, you superinduce "hysterical" manifestations. This is going a long way too far when we now know definitely that cocaine is possessed of certain well marked physiological properties which are able to upset alike the heart and the nervous system. Wise men will still withhold their final judgment, and meanwhile will employ cocaine with caution. Curiously enough many of the most enthusiastic votaries of cocaine confessed to possessing various drugs, such as nitrite of amyl, glonoin, etc., to be prepared against all emergencies.

THE DENTISTS' "WAITING ROOM."—Evening papers are nothing if they are not smart. One reads them in the sleepy hours of the evening, and requires something less dull than politics, and less harrowing than murders, divorces and suicides, to beguile the lazy gloaming. But, gentle editors, we do want something that is not hopelessly inaccurate. In a recent number of the "*Globe*," a writer—probably young, certainly foolish—narrates his experiences of a "Dentist's Waiting Room." He rigs up the time-worn booby traps of "last week's paper," and "charitable collecting cards" and so on, and so on, and so on—"ancestral portraits"—"gloomy pictures," and a lot besides. Now although one seems justified in believing the writer of such twaddle does probably go to a very second-rate dentist, yet we prefer to take the scheme as one "excogitated out of inner consciousness."

Of course there are waiting rooms and waiting rooms. While some are about as well appointed as need be, others lack coziness. Life is made up of details, and the details of a dentist's waiting room are far from unimportant. Your patients will often guage you by the character of literature, the apparent care you bestow on their comfort, the taste you display in furnishing, decorating, and the presence or absence of tidiness, neatness, and order. The happy mean betwixt "display" and dowdiness is the one thing needful in your waiting room. If you have no artistic proclivities and no eye for colour, get some friend richer in such qualities to give you a hint or two.

"English as She is Spoke."—A Colonial contemporary quotes from "a dentist" who was present at one of Dr. Younger's exhibitions and says: "Dr. Younger takes a sound tooth corresponding in space to the hole left by the missing tooth, *ligates the gum* and separates it from the *alvial process* and *drills a cavity*." [The italics are ours.] Our correspondent goes on to say, "In this morning's operation a right and a left *latteral* tooth *was* successfully implanted." How free and unfettered by the conventional trammels of grammar and spelling is this child of the new world! How clearly the onlooking dentist grasped the intricacies of Dr. Younger's operation!

Mounteranks and the Profession.—The *Daily Chronicle* reports: John "Howard Lindsay, 42, a dentist, was charged with causing an obstruction in Grundy Street, Poplar.—Sergeant 16 K. said on Friday evening he was in the street referred to. Prisoner was there standing on a brake, to which were attached two horses. Witness told him he could not be allowed to remain there. Defendant and his wife were engaged in extracting teeth from persons in a crowd of between 400 and 500 people. As he declined to go away, witness took him into custody. Detective-sergeant Duck gave similar evidence, and said when he requested defendent to move his brake and horses he refused to do so, and said he should remain until half-past ten.—Mr. J. Aaron, a tradesman, said he had to close his shop in consequence of the crowd.—Mr. Lushington fined defendent 20s., and if he was brought there again the fine would be heavier." We need hardly say the person who is styled "a dentist" is not one, his name does not appear upon the Register, and his disgraceful conduct met with a fitting recompense.

The Ameer and his Teeth.—The Ameer has had to call upon Mr. O'Meara, of Simla, to attend to his teeth, and that gentleman has, we understood, survived his visit to the august patient. Mr. O'Meara seems to have incurred no slight risk in tackling the potentate, so that it becomes a matter of congratulation that his life has been spared. Royalty in more northern latitudes rewards dentists with the flat of the sword, the Ameer is reputed to prefer the cutting edge. Well, *chacun a son goût.*

Advice to Correspondents!—Mr. Ruskin says, "certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want down right facts at present more than anything else."

Abstracts of Foreign & British Journals.

THE DENTAL REGISTER.

THE TEMPORARY TEETH.

By F. Beabody, D.D.S.

With regard to the histology of the temporary teeth further it should be remembered that the germs are found within the radius of the alveoli early in fœtal life; that the first calcific deposit is at or near what afterwards is the apex of the root, and that all continued calcification, both of crown and root, is formed from the pulp, which diminishes in proportion as the calcification advances, until it is reduced to the size, found in the completed tooth. The pulp of the temporary tooth is not as sensitive as that found in the permanent, nor is the tooth as dense. Its structure is more vascular. The pulp is larger in proportion to the size of the tooth in the deciduous set, is nearer the surface, decays more rapidly.

The temporary incisors cut the gums at from three to six months. However, this varies.

The lateral incisors appear one to three months later. It is unusual for the centrals or laterals to cause any irritation in their eruption if they come in the regular course of time and succession, while it is seldom the case that the temporary teeth which come later do not cause more or less disturbance of the general system. Formerly it was believed that the fever, restlessness, diarrhœa, and general irritability of the child during dentition was due to the teeth. More recently it is held by many physicians that the teeth are in no way responsible for this pathological condition, that their eruption is purely physiological, and that the cause of irritation must be sought elsewhere.

The writer does not accept this view.

He thinks no one can doubt that the teeth are the direct cause of many ailments.

The eight anterior teeth seldom cause irritation when the child is naturally fed upon his mother's milk. Children brought up on the bottle or fed artificially, cannot be expected to develop naturally, and must be more subject to the various diseases.

After the eruption of the eight anterior teeth, from six to nine months after birth, the child's food is generally changed, or in addition to its mother's milk other food is given and to this diet many attribute the illnesses usually imputed to "teething."

The heat and inflammation of the swollen gums, produced by the pressure of the approaching tooth, extend throughout the mouth, and probably the mucous membrane lining the stomach and intestines, is from sympathy in a susceptible and irritable condition, and this irritable condition of the stomach would receive as an irritant food that which at other times it would assimilate.

When a tooth is coming through the gums, say a molar or cuspid, the resistance is very great. Restlessness, nervousness, pain, general irritability, salivation, the relief given by pressure, all show the tooth is the disturbing cause. If this is pressing hard, the gum over the point of the tooth is white from tension. A free incision by the lancet will generally produce relief.

He cites the following case. A child of twelve months, showed evident signs of teething, after the failure of topical applications it was taken from its bed at one o'clock in the morning, and the gum over the tooth freely opened. In five minutes after this trivial operation the child was sitting up in bed with its arms around its mother's neck, laughing, crowing, and in such a glee it took an hour for it to quiet down and go to sleep. Medical men who are opposed to the use of the lancet on infants give two reasons for withholding it: hæmorrhage, the other the cicatrix left from the wound which retards the eruption of the tooth. Neither of these reasons has any weight, for if the gum is properly lanced, care being taken not to go inside of the tooth no hæmorrhage will follow, nor will the gum be thickened over the cutting edge or grinding surface of the coming tooth, if instead of making the opening directly over it, it is made a little to the outer side. Should the gum be lanced directly over the cutting or grinding surface of the tooth which is nearly ready to come through, the quick following of the tooth will prevent the wound from closing. Even on the cutting edges of the incisors and points of the cuspids a crucial incision is better than the direct line, and on molars it is absolutely necessary. It has been suggested that it is not as much the pressure of the crown of the tooth on the gum as it is the backward pressure of the crown made by the resisting gum on the uncalcified pulp which causes the troubles of teething. This will hardly hold good, for even at times of the greatest irritation, pressure on the gums and rubbing will cause a momentary relief and seems gratifying to the child. Of topical applications the crystals of bromide of potash is one of the best, the gums are gently rubbed with a piece of the bromide. The warm bath, anything that will relax the system is beneficial.

He asks why the physician, instead of the dentist is called in when a child is in pain from its teeth? The dentist is supposed not to know anything about the teeth and their relations to the surrounding tissues at such times? Or that they are not generally familiar with the proper treatment of the teeth of infants?

The permanent teeth can cause no pain in their eruption with the exception of the dens sapientiæ, and that only when there is not room for it to take its position in the arch. Accidents happen, anomalies occur, heredity comes in to play its part in the derangement of the dental organs, both in the temporary and permanent sets, when a regular and normal development should be expected. Children are sometimes born with teeth, but these teeth are generally short lived. Teeth that come late in the infant are generally followed by a strong permanent set.

Much of the condition of the temporary teeth depends on the condition of the mother during gestation. The medicines she takes may leave their impressions on the teeth, particularly the various preparations of iron.

The temporary teeth may be imperfect in their structure, poor in composition, soft and prone to decay; yet they are no indication of what the permanent set will be. It is not usual to see the child of four or five years with the front teeth so badly decayed—eaten away at the neck, face, and sides that there is but little left of them—yet these teeth are often followed by permament incisors very different in their structure, handsome, regular, and well constituted to resist decay.

While the roots of the temporary teeth are being absorbed, the root vessels and pulp are also absorbed. Should the permanent tooth come directly in the axis of the temporary, that tooth is absorbed from apex to crown. Should the permanent tooth, on the other hand, come a little out of its course so as merely to touch the tooth already in position, it furrows just in proportion to its contact with that tooth. This indicates that the contact and pressure of the permanent crown was the cause of the solution. But this is not the only factor in the case. When the root vessels of a permanent tooth from any cause are absorbed, death of the pulp always follows. Decomposition occurs, attended usually by the essentials of an abscess, or is attended with pain. Should the roots of a permanent tooth commence to absorb, the sharp edges produced by absorption act as an irritant, and inflammation and pain result. The root will absorb from apex to crown, pulp and all in a deciduous tooth and without pain.

The writer deplores that dentists do not see young patients until pain has driven them to seek relief from some exposed pulp or aching tooth. Generally the temporary teeth decay first on approximal surfaces of the molars, and this is not noticed by the parents until complaints of pain attract attention. When the pain is relieved it should be the dentist's duty to indicate any other teeth in a decaying condition. Those on the opposite side to the ones that have ached will probably be decayed, as teeth come in pairs. Should the decay have advanced so far it cannot be removed by the chisel, file, or disk, with safety, it should be removed and the cavity filled with some of the plastic preparations, and such efforts made as will keep the teeth in the mouth in a condition of comfort until they are cast off by the coming permanent set. Should incipient decay be found between the teeth, it should at once be removed by liberal separations. Some advocate anticipating decay by making separations large enough and properly formed to be self cleansing.

Where decay has commenced on the coronal surface the cavity must be filled. The teeth of the temporary set are not sensitive until the nerve is really reached, and even then they are much less so than those of the permanent set. Timidity and fear will often make the child wince, and cry out as if in pain at the removal of the decay, but it is seldom the case that real pain exists. From the time the first teeth appear they should be kept scrupuously clean, at first using a soft cloth, then as the child gets older, and the gums more firm, a soft brush should take its place and the necessity of using it be impressed on the child until it will become as much a daily routine as washing the face and hands. Every effort should be made to retain the temporary teeth as long as possible. Never remove one unless it is an apparent necessity; even roots that have lost their crowns are better kept in than removed. The exposed nerves of the temporary teeth are easily devitalized by one or two applications of creosote or other escharotic. Powerful devitalizers should never be used on a child's teeth.

The writer deprecates extraction in children unless quite imperative.

He advises kindness, gentleness and winning the confidence of a child by never deceiving it. Never, he says, tell a child it will not hurt when you know it will. Give children short sittings and do not tire them.

As conservers of the dental organs it is our duty to try and teach our patients from the time they come into our hands, and we should try and save them all possible pain. We cannot begin too early to educate them. An impression made on a child is more lasting than one made on an adult.

Much has been said about the necessary education of parents that they may properly appreciate the value of their children's teeth, and see that they have the proper care at an early age. If we educate the child we have educated the future parent, and further education at our hands will be unnecessary.

INDEPENDENT PRACTITIONER.

HOSPITAL OF ORAL SURGERY, PHILADELPHIA.

Clinic of Professscr Garretson.

MUCOID ENGORGEMENT OF THE ANTRUM.

The patient, a lady, complained of fullness of the cheek, neuralgic pains, and tenderness of the roof of the mouth on the left side. Roots of diseased teeth, molars or bicuspids, which pierce the sinus, from contiguity of the periodontal membrane and the mucous lining of the cavity, are frequent causes of such trouble as that of which the lady complained. Examination of the mouth, revealed an unbroken alveolar ridge from the cuspid tooth to the tuberosity, all the teeth having been extracted some years previously. The natural opening from the sinus into the nares, was found to be closed, the patient complaining of constant dryness of the nostril, readily accounted for by the lack of mucous discharge from the antrum, caused by the closure of the orifice. She also stated that an opening had been made into the bone twelve months previously, near the canine tooth,, when she was suffering from a similar trouble. Inferring from this that the opening then made had become closed, a bistoury was thrust through the wall of the cavity in the region of the canine fossa, resulting in a muco-purulent discharge, the feeling of distention being immediately relieved. Through the opening thus formed the cavity was thoroughly cleansed by injections of dilute phenol-sodique, the treatment being continued daily for one week, the opening being meanwhile retained with a tent of cotton.

Remarking on the frequency of antral disease, the professor said that when of strictly local origin it is easily treated. When caused by a diseased tooth with an abscess discharging into the sinus, the indication is to extract the tooth, thus forming a fistula by which the pus or other secretion can be removed, and at the same time an opening by which stimulating injections can be made. He advised phenol, carbolised water, or dilute tincture of iodine. Where the trouble has been allowed to continue, and the secretion has caused the lining membrane of the cavity to break down and ulcerate, injections of chloride of zinc, combined with one dram of zinc sulphate and one pint of water, are said to be very efficient.

A common cause of engorged antrum is catarrh of the Schneiderian membrane. A person takes cold, the inflammation of the lining membrane of the nares by relation of continuity, extends into the sinus, which becomes congested to such an extent as to close the outlet. Under such circumstances the patient complains of a sense of heaviness in the cheek, attended by soreness of a dull, sluggish character. A mode of treatment often satisfactory, when the trouble is in its early stages, is to administer a saline cathartic, or better still to break up a limited congestion, give the patient at bedtime one-sixth or one-quarter of a grain of sulphate of morphine dissolved in an ounce of acetate of ammonia. Where the disease has advanced to engorgement, it is generally found necessary to open, as in the case under notice, or to extract the first or second molar, preferably the second, and to penetrate the sinus through the alveolus of the palatine root.

LINGUAL EPITHELIOMA.

Mr. A., a gentleman sent to the clinic from California, upon examination presented expressions characteristic of epithelioma of the tongue, the disease involving two-thirds of the left side. The patient said he first noticed a slight soreness six months previously, apparently caused by ragged edges of some of his teeth. These were rounded off, but the abraded surface gradually enlarged, threatening to infiltrate the remainder of the tongue. A strong silk ligature was passed through the anterior portion of the tongue, enabling an assistant to draw it forward. A bistoury was next thrust through the healthy tissue from the under side in the direction of the raphe, and the tongue removed by the use of the ecraseur.

METALLIC ENAMEL COATINGS AND FILLINGS.

By Dr. C. H. Land, Detroit, Mich.

In the absence of practical demonstrations it is difficult to comprehend all the advantages brought about by improvements. In the first case, the patient was about sixty years of age. The right lateral incisor was prepared with a Howe post. The five remaining teeth, after the cavities were prepared, contained tooth substance restored with sections of porcelain made to imitate the exact colour and contour of the original tooth substance. The cavities are prepared as for gold filling, when a thin piece of annealed platinum plate, No. 35 standard gauge, is placed over the tooth, and by means of burnishers made to take a perfect impression of the outer rim of the cavity, after which platinum pins are attached. The object of the pins is to serve as a fastening, both for the porcelain paste or body and as retainers to hold the completed section in the cavity of the tooth. The porcelain paste or body is built upon the platinum disk and made to imitate the lost portion of the tooth. It is then baked in a gas furnace, requiring but twenty minutes for the first biscuit and fifteen for the second, and when finished, ready to be cemented with oxy-phosphate.

The especial feature of this system, to which the writer wishes to call attention, is the large amount of tooth substance preserved above the gum, there being no necessity for telescoping the root so far below as to sever the tissues. This mode of practice also dispenses with long operations and protracted use of the rubber dam; it almost entirely obviates the use of amalgam, and saves the necessity for large gold fillings; there is no malleting, no long and tedious operation either for the patient or dentist, while at the same time teeth are perfectly restored, both in appearance and usefulness.

There is another advantage in the use of the enamel coatings. When large metallic fillings are inserted, the constant thermal changes consequent upon their alternate heating and cooling must exercise an unfavorable influence upon the tissues about the tooth. Even if the pulp be dead and the root be filled, there will in time, be a checking and fracture of the tooth from the continually varying changes of temperature. An inflammation of the membranes will also be likely to occur from the same course, and this the tooth will in time be lost from the mere influence of the presence of a large mass of metal.

It is also a fact that large gold fillings cannot be inserted without so much malleting that the strength of the tooth is gone, and frail walls are cracked beyond the possibility of repair. These dangers are all obviated by the use of the porcelain facings, while teeth so restored are much more natural on filling and more grateful to the touch of the tongue than any metallic filling can be.

Review.

MECHANICAL DENTISTRY.

A Practical Treatise on the Construction of the various kinds of Artificial Dentures.

By Charles Hunter.

3rd Ed. Revised with Additions. Crosby, Lockwood & Co., London.

Mr. Hunter has in this book given to us in a concise but clear manner, the results of an extensive and valuable experience in the workroom. It is rare perhaps that we read a book in which the thorough acquaintance of the writer with the subject under consideration is felt to the same extent. In those portions of the work, however, which treat of work, done in the surgery, or of work the effects of which are only realized in the operating room, he does not in our opinion succeed so well.

We meet with the following, in Chapter I. "A struck tray is *never* employed when plaster of Paris is the impression material." This is too dogmatic, and further it does not truly represent the practice of the present day. A struck tray is *always* found to be a great boon whatever the impression material, and its advantages cannot be too highly commended.

We also take exception to Mr. Hunter's teaching on the subject of "Clasping." The description of the manipulative work of clasping is excellent and full of suggestions which come of much practice. But in regard to the size, number, and position of clasps, Mr. Hunter's teaching, although progressive, is not fully abreast of the time. In fig. 36 is shown most unmistakably the uselessness of large clasps reaching to the necks of teeth; and also the part of a tooth which should be clasped, viz., the most prominent. Thus far we agree with Mr. Hunter. But in fig. 39 we see a clasp, highly commended, which possesses the very faults condemned above. The clasps shown for a molar and a lower canine, figs. 40, 41, have faults which are condemned under one of the following rules, taught as essential principles of clasping at the present day.

a. That the bands be as few as possible or absent.

b. That they cover only those parts of the teeth where pressure is to be asserted.

The chapter on Obturators and Artificial Palates is very important. It is written in a clear and simple style, which when we consider the difficulty and complexity of the subject deserves high commendation. We feel certain that numerous readers of this difficult subject will feel grateful to Mr. Hunter for this chapter.

The book deserves a warm reception, and will, we feel confident, soon find its way to the Library of the earnest men of whom we believe the majority of the profession to be composed.

Literary Notices and Selections.

CONTRIBUTIONS TO THE HISTORY OF DEVELOPMENT OF THE TEETH.

By Carl Heitzmann, M.D., and C. F. W. Bödecker, D.D.S. M.D.S.

II. Development of Dentine.

To prepare microsopical specimens of embryonal jaws for researches in the history of the development of the teeth, the jawbones (preferably the lower) are excised from the fœtus, care being exercised not to squeeze the specimen, and placed in a one-half or one per cent. solution of chromic acid. The liquid must be changed every third or fourth day, until the hard tissues, by the removal of the lime-salts, are sufficiently soft for cutting with a razor. All trials to determine the degree of softness of such a specimen must be made by means of a needle, and not with the fingers. The epithelial structures are especially liable to be crushed, unless handled with the utmost care. The greatest obstacle to obtaining perfect specimens is caused by the fact that the enamel organ is withdrawn from the dentinal cap, and the epithelia from the connective tissue structures, a cavity being thus formed whose walls offer no resistance to the cutting instruments, and are thus easily detached from their normal position.

After having tried different methods of imbedding, the writers came to the conclusion that the best material for this purpose is celloidine, softened in absolute alcohol, and dissolved in sulphuric ether. The specimen, previous to imbedding, must be dehydrated by immersion in absolute alcohol for twenty-four hours. After this, it is kept in a mixture of equal parts of sulphuric ether and absolute alcohol about twenty-four hours longer, when it is placed in a rather thin solution of celloidine for about two days, after which it is ready for mounting upon a cork. When such a specimen is cut, it will usually be found that the spaces between the dentine and enamel, which are due to the shrinkage of the myxomatous tissue of the enamel organ, are filled with celloidine. If, however, it is found upon cutting that such a space has not been completely filled, a very thin solution of celloidine may be poured into it. A section cutter is of great advantage, since a large number of uniform and thin specimens can be obtained in a comparatively short space of time. That made by Thoma of Heidelberg, is especially to be commended. The writers would consider glycerine far superior to Canada balsam as a mounting medium, the tissues presenting a more distinct appearance. If high powers of the microscope are to be employed, only glycerine-mounted specimens will give satisfactory results.

Dentine, as is universally admitted, is strictly an offspring of connective tissue produced by the papilla, which is a formation of embryonal tissue, crowded with medullary corpuscles.

It begins to appear about the end of the second and beginning of the third month of intra-uterine life, at a time when the extremity of the epithelial cord has begun to flatten and assume a cup shape. The cavity of this cup is filled with the papilla, which sends prolongations along the outer wall of the cup, the future sack of the tooth. The more this is deepened and widened, the larger will be the papilla. If the cup of the enamel organ shows depressions corresponding to a bicuspid or molar tooth, we will find corresponding elevations upon the papilla extending into them.

The papilla is originally supplied with but few capillary blood vessels. With advancing growth, however, the vascular supply becomes greater, especially in its peripheral portions, where a delicate fibrous connective tissue is developed—the so-called tooth sack. In the seventh month of fœtal life, we observe a perfect vascular apparatus traversing the papilla, consisting of arteries, veins and capillaries. If examined with low powers of the microscope the papilla appears to be composed of small, globular, highly refracting corpuscles, between which is seen a scanty basis-substance. With high powers of the microscope, we observe globular or oblong corpuscles of small size, which are either compact and homogeneous, or possessed of a distinct reticular structure in their interior. Between small groups of such medullary corpuscles, spindle-shaped tracts appear, corresponding to the boundaries of the future territories of the myxomatous tissue, the reticulum of which in the human subject is always incomplete, never attaining the degree of development seen in the enamel organ. The largest medullary corpuscles are observed in the middle of territories surrounded by a certain amount of basis-substance. Both these corpuscles and the basis-substance have a distinct reticular structure.

The more the papilla increases in size and advances in development, the less frequent are the homogeneous and small medullary corpuscles, while the granular corpuscles are larger, each being surrounded by a small amount of basis-substance. Along the periphery of the papilla, however, there is invariably present a narrow zone in which the medullary corpuscles are more numerous and more shining than in the rest of the papilla. In the fifth month the outermost periphery of the papilla is frequently found to be composed of a hyaline rim, beneath which is a narrow zone of medullary corpuscles. The hyaline rim corresponds to the so-called structureless layer, or basement membrane so often seen between epithelial and connective tissue formations. When the enamel organ is detached from the papilla, and and this is, as above mentioned, very frequently the case, the outer surface of the basement membrane appears beset with an extremely delicate fringe, evidently the torn connection between the papilla and the adjacent enamel organ, or the ameloblasts. High powers of the microscope reveal in the apparently structureless layer a faint reticular formation, and marks of a division into medullary corpuscles.

At the beginning of the fifth month, we usually find the first traces of peculiar, elongated corpuscles along the periphery of the papilla, which are known as odontoblasts. These formations are oblong, pear, club, or spindle-shaped, arising from the coalescence of a number of medullary corpuscles, including that portion which has been previously transformed into basis-substance. The odontoblasts are sometimes seen directly beneath an already formed layer of not yet calcified dentine. The latter, in this situation, is sufficiently characterized by the presence of delicate branching dentinal canaliculi, holding the slender dentinal (Tomes) fibres. We often observe these fibres to be in direct connection with adjacent odontoblasts. If an odontoblast terminates in a sharp point, one offshoot is seen to arise from the point directly connected with a dentinal fibre. If an odontoblast has a broad basis, two or more offshoots may arise from it and run, in the shape of dentinal fibres, into the adjacent dentinal canaliculi. It may also happen that an offshoot of an odontoblast takes another direction, and instead of passing into a dentinal canaliculus, runs parallel with the border of the already formed dentine. Fully developed odontoblasts are not often seen in direct union with dentine, and this is especially true along the lateral portions of the dentinal cap. It is far more common that between the odontoblasts and the dentine medullary corpuscles are present, and the offshoots of the odontoblasts run between these medullary corpuscles in order to reach their respective dentinal canaliculi. Fully developed odontoblasts are rarely seen at the apex of the papilla. Medullary corpuscles alone are usually present in this locality, or they are interposed between the odontoblasts and dentine. Not infrequently we observe layers in the forming dentine.

The odontoblasts have arisen from the fusion of a number of medullary corpuscles, and are present where, at the time, the formation of dentine is not actively in progress. Whenever this is the case, the odontoblasts break up into medullary corpuscles, which are directly transformed into the basis-substance of the dentine. The offshoots of the odontoblasts, which are seen to run directly into the dentinal canaliculi, will appear between the medullary corpuscles as soon as the odontoblasts split up into such corpuscles. The offshoots are formations of living matter seen to emanate from a compact layer at the base and the borders of the odontoblasts. The dentinal fibres remain in situation after the formation of medullary corpuscles, or they are newly formed between the medullary corpuscles, as soon as the dentinal canaliculi are formed. The odontoblasts are not direct dentine formers, but provisional formations, from which arise the medullary corpuscles, and these are changed into the basis-substance of the dentine. Odontoblasts, therefore, the same as ameloblast, are provisional formations, and dentine, as well as enamel, originates from medullary corpuscles in the same manner in which all forms of connective tissue are known to arise.

(*To be continued.*)

Reports of Societies.

INTERNATIONAL MEDICAL CONGRESS.

SECTION IN DENTAL AND ORAL SURGERY.

THURSDAY, SEPTEMBER 8TH—FOURTH DAY—MORNING SESSION.

MICROSCOPY.

PROFESSOR FRANK ABBOTT, of New York, and Dr. R. R. ANDREWS, of Cambridge, Mass., were in charge of this department. Every facility was afforded the members of this Section to acquaint themselves with dental microscopy, both physiological and pathological. Among the ground specimens shown by Professor Abbott were those of carious teeth, congenital pathological enamel, hyperostosis (osteomas) of the roots of teeth, and deposits of secondary dentine. Dr. Andrews exhibited serial slides of the developing teeth, and the development of the dental fibril. About forty negatives from his photomicrograph were especially interesting and valuable.

CLINICS.

About thirty gentlemen gave clinics in filling teeth with gold, pivoting teeth, constructing artificial dentures, and treating (surgically) diseased conditions of the gums. It would require too much space to enumerate all the gentlemen who acquitted themselves in a creditable manner.

C. L. GODDARD, A.M., D.D.S., of San Francisco, Cal., read a paper entitled

PAIN IN THE TEMPORO-MAXILLARY JOINT CAUSED BY IRREGULARITY OF THE TEETH.

Patient, thirty years old, experienced pain in temporo-maxillary joint during mastication, which was caused by straining the muscles and ligaments, owing to masticating with the jaw protruded. When the teeth were brought together, as in the act of eating, the incisors alone touched, and the bicuspids and molars were about one-eighth of an inch apart. The treatment employed consisted in spreading the upper teeth and thereby securing a proper articulation.

DR. E. S. CHISHOLM, of Tuscaloosa, Ala., read a paper entitled

THE INFLUENCE OF WEATHER CHANGES ON THE HUMAN ORGANISM.

After carefully noting the influence exerted by temperature, humidity, and electricity, the author concludes that by far the greatest power over human organism is exerted by atmospheric pressure. In support of this theory he submits two arguments. The normal atmospheric weight on man is 14.7 pounds to the square inch at the sea level. The body is sustained by an equal power of resistance, wisely provided. If the pressure be less, the surface of the body will be distended, and the superficial circulation less restrained. This change can be brought about by exposure to great altitude, as well as by natural physical causes, when the circulation will be disturbed just the same. Any undue pressure on a portion of the body may then be felt. May not this disturbance of tension on soft tissues which are fixed to the bony framework of man, or where disease has a seat in periosteal and ligamentous attachments, be liable to greater inflammation? Or when a nerve of a tooth, which in a state of health is inclosed in a bony chamber (which has no expansive liberties, nor needs them as long as health continues), becomes exposed through a small aperture; when the normal atmospheric balance is lowered, the nerve has a tendency to be drawn through the aperture and takes on inflammation, probably followed by congestion and complete devitalization.

A report from the Pennsylvania Hospital, some years ago, on the observation of barometric pressure in surgical operations, shows that in 259 operations the barometer was ascending in 102, descending in 123, and standing in 34. Fifty-four of the whole number were fatal, 11 having been operated on with barometer ascending, 25 when descending, and 8 when standing.

AFTERNOON SESSION.

The Section was honored by a visit from the President of the Congress, **DR. N. S. DAVIS.** In introducing him President J. Taft recounted the efforts that had been put forth by Dr. Davis to secure recognition to the Dental Section. To him more than to any other man in the medical profession is due the credit for having removed the obstructions in the way of the dental specialty.

DR. DAVIS replied: Twenty-two years ago I had the pleasure of entertaining the members of the American Dental Association, then assembled at Chicago, at my house. On that occasion I expressed the hope that some day, in the near future, we might meet on equal grounds. My hopes of that day are realized to-day. At the last meeting of the American Medical Association, when the question was brought up to admit dentists holding their degree from a recognised institution, it met with no opposition. The action of that body has for ever removed the obstacle which had been in your way, and you are now on an equal footing with your medical brethren. He congratulated the members upon the interest they took in the advancement of the healing art, and closed by warning them not to fall into "schools," but to meet everyone on the broad field ef science.

DR. E. S. TALBOT, of Chicago, Ill., read a paper on

ETIOLOGY OF IRREGULARITIES OF THE JAWS AND TEETH.

This paper was very exhaustive and thoroughly well prepared. The writer showed throughout an intimate acquaintance with the subject, and the Section was not lacking in appreciation of his efforts.

The paper was discussed by **DR. W. C. BARRETT**, of Buffalo, N. Y.

A paper by Dr. J. J. R. Patrick, Belleville, Ill., on "Irregularities," was read by title; also one by Dr. E. H. Angle, Minneapolis, Minn., entitled "Notes on Othodontia, with a

New System of Regulation and Retention;" also by Dr. L. C. Ingersoll, Keoku, Ia., on "Inflammation of the Oral Tissues."

(*To be concluded.*)

MANCHESTER ODONTOLOGICAL SOCIETY.

The First Meeting of the above Society for the current session was held at the Grand Hotel, Aytoun Street, on Tuesday, October 4th, when the President, Mr. Henry Planck, delivered his inaugural address, a report of which will be found on page 1049. Messrs. C. Ash & Sons, exhibited a large selection of dental instruments and appliances.

The following are the officers for the ensuing year:—

President—Mr. Henry Planck.
Vice-Presidents—Mr. Wm. Headridge and Dr. Taylor.
Treasurer—Dr. Parsons Shaw.
Councillors—Dr. Betts, Messrs. H. Campion, W. Dougan, W. Dykes, P. Headridge, and W. Simms.
Secretaries—Mr. G. G. Campion & Mr. G. N. Skipp.

THE ODONTOLOGICAL SOCIETY OF VICTORIA.

The ordinary monthly meeting of the Odontological Society of Victoria was held on July 7th.

There was a good attendance. Mr. Cumming exhibited a tooth showing calcification of the pulp.

Mr. Iliffe an exostosed root, two temporary upper central incisors gemminated, also the models of a case, in which he had separated the left upper central from the right central incisor, to make room for an artificial tooth corresponding to the one which had been lost prematurely; also several sections of Dentine and Enamel under his microscope.

Mr. George Thompson, L.D.S. read a paper on "Pyorrhœa Alveolaris."

Mr. E. C. Carter stated that he had used Eucalyptus with good results.

Messrs. Cumming, Iliffe, and MacGregor also commented on the paper.

On Aug. 4th the ordinary monthly meeting of the Odontological Society was held.

There was a large attendance, Mr. Cumming offered to contribute some 30 or 40 volumes to the library of the society.

It was proposed to procure certain current journals for the use of the members, also to arrange the specimens now possessed by the society as a dental museum.

Mr. Cumming exhibited two carious teeth from the skull of an aboriginal.

Mr. Thomson laid on the table a collection of typical and abnormal teeth.

Mr. L. A. Carter, D.D.S. read an interesting paper on Sensitive Dentine and its treatment, which led to considerable discussion.

GEORGE THOMSON, L.D.S.
Aug. 30th, 1887. *Hon. Sec.*

NATIONAL DENTAL HOSPITAL--STUDENTS' SOCIETY.

ORDINARY MEETING HELD OCTOBER 14TH.

MR. HENRI WEISS, PRESIDENT, IN THE CHAIR.

THE minutes of the previous meeting having been read and confirmed, Messrs. Kitson, Field and Faro were admitted members of the Society. Mr. Fripp then exhibited the model of the upper jaw of a woman in which there was transposition of the canine and first bicuspid; also that of a singularly well developed set of teeth showing the cingulum on the incisors to a marked degree. After other communications of minor interest were made, Mr. Rushton proceeded to read his paper on "The Special Pathology of the wisdom tooth," in which the development, eruption, treatment and those points suggested by the theory of evolution were exhaustively dealt with. Among the numerous specimens brought forward to illustrate the text was an upper tooth which had its root considerably worn down by attrition, its pulp cavity closed by secondary dentine, whilst the crown had remained persistently beneath the gum, its existence only being disclosed on extraction.

After a full discussion the meeting was adjourned until November 4th, when a paper will be read by Mr. Lancaster, M.R.C.S., L.R.C.P.

THE DENTAL STUDENTS' SOCIETY OF BIRMINGHAM.

THE Annual Meeting of the Birmingham Dental Students' Society was held at 71, Newhall Street, on Thursday, September 21st, 1887.

Mr. F. H. Goffe, L. D. S. took the chair, and there were also present Messrs. Neale, Maden, Howard, Matthews, Sims, Parrott, Foster, Berlyn and Naden.

The minutes of the last meeting having been read and confirmed, were then signed by the Chairman.

Letters of apology and regret were received from Mr. Charles Sims, Mr. J. Humphries, and Mr. F. W. Richards.

The report upon the last year was then read, as follows—

"The Birmingham Dental Students' Society was inaugurated at the beginning of the Winter Session, last year, (1886).

Together with the President, Vice-President and the Officers who have presided we number some fifteen or sixteen members.

Mr. Charles Sims has presided for the past year, Mr. J. Humphreys being Vice-President.

Reference to the minute book shows an average attendance of nine members at each meeting.

The papers which have been read comprise—"Extraction and its attendant accidents," by Mr. W. Palethorpe, L. D. S. On "Pivots and Pivotting," by Mr. Maden, L. D. S. On "The Administration of Nitrous Oxide under pressure," by Mr. Howard. On "Gold Plate work," by Mr. Parrott; and on the "Pathology of Dental Periostitis," by Mr. Miller.

Pathological Specimens of much interest, including epithelioma of the tongue, epulis (two specimens), and an antral cyst, have been exhibited, and a rare specimen of an odontome radiculaire, with notes upon its history, was given by Mr. Matthews.

Notices of the formation of the Society, have been sent to, and have appeared in, the *British Journal of Dental Science* and *Record*.

One member, Mr. Maden, has during the past year obtained the Diploma of L. D. S. which may be taken as a credit to the Society.

I have also to announce with deep regret the decease of one of our members, Mr. A. J. Wilson.

Messrs. Foster and Royal were elected members of the Society.

The officers for the ensuing year were then elected as follows—*President*, Mr. J. Humphreys; *Vice-President*, Mr. Breward Neale; *Hon. Treasurer*, Mr. G. F. Matthews; *Hon. Secretary*, Mr. P. T. Naden; *Committee*, Messrs. F. Howard; E. Sims; E. Parrott.

It was resolved that no rule should be altered except at a special meeting called for that purpose.

Mr. Breward Neale was elected Chairman for the next meeting.

A vote of thanks to the retiring Secretary then terminated the proceedings.

Dental News.

Pass List of the Royal College of Surgeons of England L.D.S. examination.—J. H. Badcock; R. Ackland; J. F. Colyer; T. A. Goard; W. H. Kendall; F. T. Miller; G. H. Morley; H. Picton; B. Saul; A. H. Smith; H. S. Stoner; J. B. Wakefield.

Royal College of Surgeons, Edinburgh.—During the October sittings of the Examiners, the following gentlemen having passed the final examination, were admitted Licentiates in Dental Surgery of the College:—Ernest Edmund Taylor, Manchester; John Girdwood, Edinburgh; John Bain, Galashiels.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

EXAMINATION FOR DIPLOMA IN DENTAL SURGERY. October 31, 1887.

Anatomy and Physiology.

1. Describe the Muciparous Glands lying beneath the front part of the Tongue. Adduce the grounds on which they have been regarded as the seat of Ranula.
2. Describe the hard and soft Palate, the action of their muscles, with the nerve and blood-supply, and give their bearings upon the Surgery of the Palate.

Surgery and Pathology.

3. Give the causes and treatment of Bleeding from the Gums and Jaws.

4. Give the signs and treatment of a Foreign body impacted in the Rima Glottidis.

Dental Anatomy and Physiology.

1. Describe the dentition and the rostrum of a Saw-Fish. What light is thrown upon the homologies of teeth in general by the teeth of Sharks and Rays?

2. Describe briefly the growth of the Lower Jaw before and after its union at the symphysis. How has its method of growth been traced?

3. Describe minutely the relations of the Upper to the Lower row of Teeth when closed, and point out the advantages of such an arrangement.

Dental Surgery and Pathology.

1. What influences are known to injuriously affect Teeth during their development, and how are they subsequently manifested?

2. Give the causes of Alveolar Periostitis. Describe its varieties, treatment, and terminations.

3. What are the difficulties to be encountered in rendering Stoppings water-tight? How are these to be combated in the application of the several filling-materials in ordinary use.

HOW TO RAISE THE STATUS OF THE PROFESSION.

The *Bournemouth Guardian* of 29th of October, gives the following particulars of an affair which does not, if true, redound to the credit of all parties concerned.

Restall and Son, decorators and sanitary engineers, Commercial Road, v *A. and C. Morgan*, dentists.

The claim was for £13 13s originally, of which £2 11s 7d had been paid into court, leaving a balance of £8 11s 9d.

This, Mr. Bell for the defendants contended, was the amount of a contra account for board and lodgings, owing by one of the plantiff's sons, G. F. Restall, for seven weeks, when the branch business in Bournemouth was started.

By Mr. Bell: R. G. Restall the elder partner, stated that his son was a visitor at the defendant's. All the Bournemouth work came into the London business.

G. F. Restall said that he and the defendants were at one time on terms of intimacy. The work was given him by Charles Morgan, and he did the work in the name of the firm. With regard to the board and lodgings, he denied that there was any understanding that he was to pay for that. The defendants' often came to his house and partook of his hospitality.

By Mr. Bell : He had not stayed in the defendants' house any length of time, but when he had done so, it was by invitation. Perhaps a dozen times in all.

Mr. Bell pointed out that in the defendants' contra bill it was stated that the plaintiff's had had fowls, eggs, potatoes—a sack and a half—a piece of oilcloth, and other items. Witness denied having had anything except the oilcloth. The counter claim had not been sent in until the summons against the defendants had been issued.

G. F. Rolls, collector, said that he had called on the defendants for the plaintiff's account four or five times, and that on the last time he called in March, the defendant, E. Morgan, told him that if the plaintiffs were hard on him he should send in a bill for board and lodgings.

Another witness, Jacob Colbran, employed by the plaintiffs, said that he called for the account, and the defendants told him that if Mr. Restall was going to press them, they would send in a counter account.

Mr. Bell contended that the plaintiff, G. F. Restall, knew there was a set-off and that the order to do the work was given to him and to him alone, hence the action had nothing to do with the firm at all.

Verdict was given for the plaintiffs.

[We may mention that no one of the name of Morgan appears upon the Dentists' Register for 1887 as being in practice in Bournemouth.]

THE DENTAL HOSPITAL OF LONDON.

The Annual Dinner of the Staff and Past and Present Students will be held on Saturday, December 3rd, at the Holborn Restaurant under the presidency of George Gregson Esq. Gentlemen either now or formerly connected with the Hospital or Medical School, who may, through inadventure, not have received special notice, and who desire to be present, are repuested to communicate with the Dean, at the Dental Hospital, 40, Leicester Square.

The following gentlemen have up to date intimated their intention to be present:

Sir Edwin Saunders, Dr. Mitchell Bruce, Dr. Dudley Buxton, Messrs. E. Apperly, E. J. Ash, W. H. Ash, H. Baldwin, J. H. Badcock, E. Bartlett, R. H. Bates, M. L. Bell, Tom Bird, H. Blandy, J. T. Browne Mason, J. R. Brownlie, J. O. Butcher, F. Canton, S. Cartwright, A. R. Colyer, J. F. Colyer, D. A. Cormark, G. Cunningham, F. E. Davar. M. Durlacher, L. Durlacher, H. Eskell, W. F. Forsyth, A. Gibbings, F. G. Grimsdale, F. A. Harsant, D. Hepburn, Alfred Hill, S. J Hutchinson, W. H. Kendall, E. A. Manton, W. P. Paterson, A. Pearce Gould, F. N. Pedley, J. Lee Pike, E. J. Preedy, A. C. Pritchard, F. Richardson, C. Robbins, C. C. Robinson, Claude Rogers, G. Seymour, S. W. Sibley, Morton Smale, C. R. Smith, L. C. Smith, W. Scott Thomson, E. M Tod, C. S. Tomes, F.R.S., J. Smith Turner, A. S. Underwood, H. A. Washbourne. J. H. Whatford, R. White, G. O. Whittaker, Caleb Williams, R. H. Woodhouse, W. H. Woodruff.

Correspondence.

DENTAL ADVERTISING.

To the Editor of the "British Journal of Dental Science."

Sir,—Why not follow the example of the members of the Stock Exchange, and insert an advertisement in the daily papers, calling attention to the fact that possessors of the L.D.S., R.C.S. Eng., diploma do not advertise nor are they allowed to do so?

Surely this would enlighten the public. A fund might be instituted to which I feel sure several dentists would willingly subscribe.

am, Sir, yours &c.,

L. D. S.

[This is a good suggestion, but, unhappily, it is not true that L. D. S.'s do not advertise—.Ed. B. J. D. S.]

THE USE OF STEEL BOTTLES FOR NITROUS OXIDE GAS.

To the Editor of the "British Journal of Dental Science."

Dear Sir,—Your issue of the 15th Oct. contains some very amusing observations as to the deserts of any individual who might essay to "Parboil" liquid nitrous oxide, the possibility of which is ingenuously hinted at by the writer of a letter in the "*British Medical Journal*" of October 1st, ult.

The writer in question, Mr. Barlow, "a member of the firm of Barth & Co.," contends that since liquid nitrous oxide expands 12 of its volume for 20°C (*i.e.* volume at 0 C becomes 1.12 at 20°C) and if the expansion for higher temperature is uniform at 100°C (212°F) one volume would become 1.6 volumes. Further 15 oz. (=50 gallons) occupy 27.7 c. inches, at 0°C at 20°C (68°F) 31·02 c inches. and at boiling point 44.32 c. inches. If this liquid nitrous oxide is assumed to be incompressible "bottles tested to 4000 lbs. would not be strong enough to resist the expanding liquid." That is, if it is heated to the boiling point of water. Now the convenience of light steel bottles is so great that I propose to show that Mr. Barlow's fears anent light steel bottles are unfounded.

In the first place, no one other than a lunatic would heat liquid nitrous oxide to the boiling point of water. Were this done, the containing bottles would be so hot as to burn the hand!

Secondly, for all ordinary temperatures the steel bottles I employ are more than able to bear the "pressure of the expanding liquid nitrous oxide." I have attempted to rend the bottles by pressures considerably above 4000 lbs., and have failed. I have forced 16 oz. of liquid nitrous oxide into my bottles and without bursting them. I therefore hold that Mr. Barlow's arguments are untenable, and that the articles in question "Light Steel Bottles" are in every way *safe, sound* and reliable.

Yours respectfully,
J. F. BLENNERHASSET.

1a, Vernor Street, King's Cross Road, W.C.

To the Editor of the "British Journal of Dental Science."

SIR,—Your correspondent, Mr. Fletcher, in answer to my last letter, says: "For a man to publish things to his own shame for the sake of profit, stands confessed as unfit for a respectable position." Now, does Mr. Fletcher quite grasp the idea intended to be conveyed by "Molar?" I think not; because "Molar" desires, to his own shame, to draw men of standing together to repress this growing evil. Mr. Fletcher, as a manufacturer, probably has his own views on advertising, and so does not see things in the same light as "Molar." I was glad to see that my last letter elicited a reply from Mr. W. H. Waite, of Liverpool. In answer to Mr. Waite I may say I am not a member of the British Dental Association, and further, that there are a number of dentists in the United Kingdom who would like to know the exact object of the B. D. A. and what it has achieved during the past few years towards the suppression of dentists advertising. Mr. Waite says that if this Association could muster 1500 members, it would be able to accomplish something, why does this Association sleep? If it is formed to assist in promoting the interests of the dental profession, I would suggest that the Association should send a circular letter to every qualified dentist, asking him whether or not he is in favour of the advertising in the lay press by dentists. Whatever expense such a measure entailed would be willingly meet by the profession, and I for one should be pleased to subscribe to a fund established for the purpose. Mr. Waite's 1500 names would, I feel assured, soon be secured by this means. I should, for my own satisfaction, like to know if the B. D. A. does exclude advertising dentists. In conclusion I must assure Mr. Waite that I do not intend to content myself with an occasional growl in the journal, but I shall endeavour to have the subject ventilated in the medical journals, and if this fails I shall feel that I have endeavoured to the best of my ability to wipe out the greatest evil that conduces to blacken our "high and interesting profession," I should be glad if Mr. Waite would communicate with me, for the present through you.

I am, etc.

"MOLAR."

November 15th, 1887.

"Molar" does not mention whether, while he joins Mr. Waite in a righteous crusade against "advertising quacks," he proposes to continue his own advertisements.

[Ed. B. J. D. S.]

"ADVERTISING DENTISTS."

To the Editor of the "British Journal of Dental Science."

SIR,—In reply to Mr. Waite's letter in last issue inviting the Profession "to become members of the British Dental Association and give their personal assistance, sacrifice their time, money and labour to promote this important end." It would, no doubt, be very interesting to the Executive of the British Dental Association to increase their members under that or any other plea so as to have large funds in hand, but the present members and others would like to know something about this tempting offer. Is the Association against advertising? Does it wish to do away with advertising altogether, and if so, does it include any advertising members, or does it not admit previous advertisers to its fold? (I am afraid this is the case). How then could "Molar" who admits advertising, but wishes to put it down, accept the invitation when advertising is admitted by its members? Also would he be prepared to pay his guinea and have the names of the leading men such as those on the Councils, etc., indirectly advertised in the meetings to the exclusion of those members who cannot become leading men but ought to be satisfied by paying their guinea yearly and helping others and be grateful in exchange, to receive 7s. worth of Journal, to see all the toasts and dinners still further advertising the names of the leading men. What becomes of the hundreds of pounds received yearly from Subscriptions? Where are the detailed Balance Sheets? I should like to see one. I am afraid the Association is between two stools, and cannot go heartily against the advertisers, there being so many among its own members, and the non-advertisers are paying to be classed equally with the advertisers, and cannot interfere—perhaps being in the minority. The footing of the Odontological Society really is the proper one for the Association and is the one it should be able to claim to put down advertising by not admitting any such members.

I concur with your Editorial remarks which should be answered by the Executive of the Association with a statement of their doings for the general interest of the Profession. Why does not the Association publish its Reports in all the Dental Journals and make them known throughout the Profession, and induce new men to join by showing the good achieved for the orthodox members of the Profession by its existence. There would be common sense in that.

Yours etc.

COMMON SENSE.

Hospital Reports.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Sept. 1st to Sept. 30th, 1887 :—

Number of patients attended		3380
Extractions	Children under 14	481
	Adults	1120
	Under Nitrous Oxide	525
Gold Stoppings		130
Other Stoppings		355
Advice and Scaling		398
Irregularities of the Teeth		66
Miscellaneous and Dressings		395
Total		3470

Herbert Williams, L.D.S., *House Surgeon.*

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Oct. 1st to Oct. 31st, 1887 :—

Number of Patients attended		2719
Extractions	Children under 14	444
	Adults	1078
	Under Nitrous Oxide	782
Gold Stoppings		305
Other Stoppings		815
Advice and Scaling		203
Irregularities of the Teeth		123
Miscellaneous and Dressings		445
Total		4195

Herbert Williams, L.D.S., *House Surgeon.*

Statement of operations performed at The National Dental Hospital from October 1st :—

Number of Patients attended		2180
Extractions	Children under 14	390
	Adults	630
	Under Nitrous Oxide	776
Gold Stoppings		103
Other Stoppings		633
Advice and Scaling		241
Irregularities of the Teeth		452
Miscellaneous		338
	Total	3568

C. A. Patterson, *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of September, 1887 :—

Number of Patients attended		845
Extractions	Children under 14	615
	Adults	
	Under Nitrous Oxide	82
Gold Stoppings		11
Other Stoppings		70
Miscellaneous		290
	Total	1068

Charles H. Buckley, L.D.S., Eng., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester, during the month of October, 1887 :—

Number of patients attended		954
Extractions	Children under 14	685
	Adults	
	Under Nitrous Oxide	131
Gold Stoppings		34
Other Stoppings		61
Miscellaneous		261
	Total	1172

Charles H. Buckley, L.D.S., Eng., *House Surgeon.*

Monthly Statement of operations performed at the Dental Hospital, Birmingham, from Sept. 1st to Sept. 30th, 1887 :—

Number of patients admitted	1332
Extractions	1205
,, Under Anæsthetics	42
Gold Stoppings	11
Other ,,	102
Advice and Scaling	121
Irregularities of the Teeth	4
Miscellaneous	214
Total	1699

W. T. Madin, *House Surgeon.*

APPOINTMENT.

Mr. Frank Lancaster, L.R.C,P., London, M.R.C.S., Eng., has been appointed Assistant House Surgeon to the National Dental Hospital, Great Portland Street, W.

BOOKS AND JOURNALS RECEIVED :

Dental Vade Mecum, by James Hardie, Sir William Collins & Co., Glasgow ; Die Extraction der Zähne, von L. H. Holländer, Arthur Felix, Leipsic ; British Dental Association Journal ; British Medical Journal ; Pharmaceutical Journal ; Chemist and Druggist ; Ohio State Journal of Dental Science ; Independent Practitioner ; American Journal of Dental Science ; The Dental Review ; Dental Cosmos ; Dental Record (London) ; Monattschrift des Vereins Deutscher Zahnkunsler ; L'Art Dentaire ; Items of Interest ; The Dental Register ; L'Odontolgie ; Deutsche Mouatsschrft für Zahnkeilkunde ; The Dental Advertiser ; The Dental Journal ; Zahntechnische Reform ; The Medical Bulletin ; El Arto Dental, Mexico.

COMMUNICATIONS HAVE BEEN RECEIVED FROM—

Mr. Herbert Williams, London ; Mr. Franks, Oxford ; Mr. Charles Buckley, Manchester ; Mr. Campion, Manchester ; "Molar," Mr. T. W. Madin, Birmingham ; W. Thomson, Victoria ; Mr, C. A. Patterson, London ; Secretary of Edinburgh College of Surgeons ; Secretary of the National Dental Hospital ; Secrctary of tha London Dental Hospital ; G. W. Eglinton, Dalton-in-Furness.

British Journal of Dental Science.

No. 477. LONDON, DEC. 1, 1887. Vol. XXX.

ON EMPYEMA OF THE ANTRUM.*

By B. Fränkel.

The diseases of the antrum, a cavity which was already known to Vesalius, have attracted a varying degree of attention ever since the publication of Highmore's work, Corporis humani disquisitis anatomica, which first drew the attention of surgeons to them. There have been times, when the opening of the antrum was in fashion and was one of the operations most frequently performed, at others it was hardly ever done. The present time may be said to belong to the latter category, the more through the discovery and use of rhinoscopy, the recognition of tumours of the lateral walls of the œsophagus, and other improvements in diagnosis, affections were properly localised, the more surgeons confined themselves to assume and to treat disease of the antrum *in those cases in which there were only alterations in the shape of this cavity or fistulous openings into it from either the cheek, the alveolar border or the palate.* In the absence of symptoms visible to the eye, or of changes to be felt by the finger, diseases of the antrum were looked upon, by the majority of medical men, as quite as obscure as the cavity in which they had their seat; to these, however, there were some few celebrated exceptions amongst others, B. Schech. Diseases of the antrum unaccompanied by any of these symptoms were, however, generally looked upon as generally comparatively rare occurrence.

This state of matters has, at least as far as I, personally, am concerned, been altogether changed through the works of Ziem of Dantzig.

Ziem himself for many years the subject of empyema of the antrum has shown 1st that the disease is not rare; and 2nd, that it may be present and run its course without any of the so-called classical symptoms. In the discussion on this subject in the laryngological section of the congress for natural sciences, which followed the reading of a paper by Störk, Tornwaldt (of Dantzic), Guys (of Amsterdam) and Schlisinger (of Dresden) all supported Ziem's views on both these points. On the other hand, the discussion showed that much remained to be learned with regard to diagnosis of empyema of the antrum. Thus Tornwaldt cited a number of cases in which Ziem had made an opening into the sinus maxillaris, and in which he found no pus, and he stated that the utmost value that could be attached to the operation was that of an exploratory incision. My increasing belief in the truth of Ziem's views in this respect and my greater experience of the important sufferings of patients directly due to empyema and which disappear with the cure of this affection, make me feel anxious that a method which offers such promising results to the surgeon should not fall into discredit owing to inconsiderate application. For this reason I have been induced to bring the subject before the notice of the members of this society. I intend, however, to restrict my remarks to the description of those forms of empyema of the antrum in which *we find no increase in size of the cavity nor any fistulous openings*, for these varieties are sufficiently well known, and need, at least as far as diagnosis is concerned, no further study.

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* Paper read before the Medical Society of Berlin.

If we exclude such causes as the penetration of foreign bodies, caries of the walls and other rare causes, we find that empyema of the antrum usually arises *in one of two ways, either by extension from the nasal mucous membrane through the ostium maxillare or directly from the alveoli of the teeth.* The ostium maxillare through which the antrum communicates with the nose is a round foramen at least three m.m. in diameter, the bony wall of which is formed by the processus uncinatus of the ethmoid. It is situated in the posterior and inferior part of the hiatus semilunaris, and thus opens into the middle meatus to the side of the middle turbinated bone. The alveoli of the two bicuspids of the first molar and usually also of the canine and second molar are, in cases of normal development of the alveolar border of the antrum only separated by a very thin plate of bone from the mucous membrane of the antrum and they are also visible as prominences from the antrum. Occasionally the fangs of the teeth protrude through the bone and are only covered by the mucous membrane, so that the mere extraction of the tooth leads to the opening of the antrum.

Authorities differ as to the relative frequency of empyema due to extention of disease through the osteum maxillare or through the alveoli. Zuckerhandl, who may, perhaps, claim to having had more anatomical experience of the antrum than any one else, states in his classical work on "The Anatomy of the Antrum of Highmore," (Vienna, 1882, page 137,) that most of the varieties of inflammations of the sinus maxillaris are extensions from the mucous membrane of the nose. I am unable to agree with him on this point with regard to empyema. It is true that I cannot lay claim to any great amount of anatomical experience in the matter ; but clinical observation has shown me that in the *large majority of the cases of empyema* which have come under my notice, *disease of the dental alveoli was the initial cause.*

Ziem's own history is a typical picture of the course of empyema in those cases which I have observed. He states that in his own case the fetid blenorrhœa was due to his having kept a plug of cotton wool too long in the root of a molar which was decayed down to its very apex. Most patients give a similar history. They may also, perhaps, have had a chronic alveolar periostitis, in which the secretions usually flow through the dental canal. Supposing this becomes blocked up by particles of food or such like, the secretions are retained and pain is felt usually slight in nature and of short duration. The disappearance of the pain is a sign of the secretions having burst into the antrum. In the cases I have observed, this mode of onset was proved either by the direct observation of the patient, or by the fact that I have not met with a single case of empyema of the antrum in which either an affected tooth had not been removed, or one did not show the above described symptoms. Zuckerhandl is, it is true, of Hunter's way of thinking, *i.e.* : that this process is reversed ; that is, that the caries of the tooth is directly due to a purulent inflammation of the antrum. In proof of which he mentions that the dental nerves are occasionally found lying free in the cavity, or surrounded with pus, and also that the pain and formation of pus still go on after the extraction of the teeth. It is well established, as shown by Cloquet, that pain may be felt in the teeth when pus forms in the antrum ; but I cannot bring myself to believe that alveolar periostitis and caries of the fang can be developed in this wise. Every-day experience shows us the frequency of disease in the roots of teeth, and it would be easy for me to mention valuable examples of bursting of the secretion into the antrum which have been collected by Ziem, if I were not in a position to cite cases which have come under my own observation.

This assumption receives no support but rather the reverse from the history of patients, who refer the flow of pus from the nose to a former catarrh. Even in cases where the empyema of the antrum can be directly traced to the alveolus, the patients are very apt to look upon the purulent discharge as due to a cold in the head. The unilateral character of the catarrh is often a proof of the wrong impression of the patient.

To avoid any sort of misunderstanding, I must ask you to clearly understand that I only refer to true empyema. If inflammatory conditions in which the secretions are only mucous be included, the proportion will be somewhat altered. The latter are almost exclusively due to extension of disease from the nose. Anatomically, according to Kuckerhandl, two forms of inflammation are met with in the antrum. In some, he says, inflammation of a high degree is found in the lowest layer of the mucous membrane lining the antrum, those layers, in fact which go to form the periosteum. They may be swollen and œdematous. The case is different, however, when the antrum is diseased in cases complicated with rhinitis suppurativa ; here, this kind of swelling is not found, the lining membrane is a good deal swollen with ecchymoses here and there, and covered with a thick pus or the purulent and even hæmorrhagic exudation is found to have collected in the antrum. I believe the description which Zuckerhandl gives of the latter form, to be that of the anatomo-pathological appearances of a collection of pus in the antrum due to disease of the teeth. If it were not so, it would be hard to explain why the purulent and more severe form of inflammation should give rise to less marked symptoms than simple catarrh. It must also be noted that in many of these cases the nose was found to be in a perfectly healthy condition.

These facts added to my clinical experience, lead me to the expression of the following propositions concerning the etiology of empyema of the antrum. *It usually proceeds from the alveoli of teeth. It may, however, also occur from the extension of the purulent inflammation from the nose. But this is the less common form.*

I attach some importance to the discussion of the etiology of the empoyema of the antrum in this way, for it is by this means, only, that some of the circumstances which are here observed can be satisfactorily explained. Thus all authors agree that *among the cavities adjoining the nose, the antrum is by far the most frequently affected.* No influence can be ascribed to the fact that the antrum is the largest of the neighbouring cavities. The increased liability of the antrum to disease is due far more to the vicinity of the alveoli of the teeth and is seen in a striking way if we include the cases of purulent affections. They are very common. Ziem gives a description of 25 cases; I myself operated on seven cases of empyema of the antrum during the last quarter. The frequency of this disease can only be accounted for if we assume its connection with the alveoli.

The nature of the secretion also tends to support this view. In the cases of which I speak, we have to deal with, not mucous or muco-pus, but true pus. It is more or less thick, but pus it is, which flows through the ostium maxillare into the nose, or which escapes after the opening of the antrum. In the large majority of cases, no pus is formed in the nose itself.

In many instances, even when there is no ozoena, the pus from the antrum has a fetid smell. The smell is different from that of ozoena. It is exceedingly difficult to give an account of the differences between various smells. To me the smell of ozoena has an admixture of sweetness with it, while that of empyema is simply a foul stench. Occasionally, however, it has an aromatic odour mixed with it. Then it smells somewhat like pus from the mouth. It sometimes happens that pus from the antrum which did not smell badly becomes very offensive after the antrum has been opened through the alveoli. In such a case, there can be no doubt that the smell is communicated from the mouth. According to my sense of smell, however, it is exactly similar to that which is noticed in cases of fetid empyema of the antrum. I fancy myself that in all these cases, the germs from the mouth make their way into the antrum through the alveoli and cause, and keep up the offensive changes. The odour of the pus from the antrum also helps to denote its alveolar origin.

These considerations of the etiology lead us to the subject of the symptomatology and diagnosis. I must ask to be allowed in this case also to revert to the secretion.

The pus which either flows into or is secreted in the antrum, comes to fill up the cavity. The point now is whether the ostium maxillare is open or not. In those cases in which the opening is permanently closed, changes of shape occur and fistulous passages form ; these are not the cases I intend to consider. I may start therefore by saying that the secretion may flow backwards and forwards through the open ostium.

The ostium maxillare is situated in the upper and anterior part of the antrum in such a position that it affords a certain protection against any secretions of an evil kind from the nose ; but at the same time it acts in a most injurious way for the outflow of secretions contained in the antrum. As the earliest observers of the disease in question state, secretions in the antrum cannot flow out when the person is lying or standing, until the cavity actually overflows. If the cavity is not filled to overflowing, in order that secretions may flow through the ostium into the hiatus, the head must be laid either on the sound side or thrown entirely backwards.

Clinical observation teaches us that in many cases there is a constant trickling of pus into the nose, whereas in others the secretions only run out of the antrum in certain positions of the body.

In the first case we may suppose that there is a rapid and free formation of pus which fills the cavity and allows it to flow out uninterruptedly, whereas in the latter case the secretion is formed more slowly.

Our colleague, Hartmann, has given us another method besides the bodily movements of the palate, by which we can get the secretions out from the recesses of the antrum. The rapid change between condensation and rarefaction of the air by means of air bags is also shared by the contents of the antrum and is often sufficient to eject small portions of the secretions into the nose so that we are enabled to detect it there.

We are thus in a position to bring the secretion in the nose before our eyes in all the cases in which there is pus in the antrum and the ostium is not closed. For we can either see it flow uninterruptedly from the hiatus semi-lunaris, or we can detect it after repeated observation after special bodily movements, or after using the air douche *the pus flows into the middle nasal meatus* and can be seen running along the side of the middle turbinated bone usually close to the middle a little to the front, occasionally, also, to the back.

(*To be concluded.*)

LECTURES ON DISEASES OF THE JAWS.

By Christopher Heath, F.R.C.S., Hunterian Professor of Surgery and Pathology.

LECTURE III.—Diseases of the Temporo-Maxillary Articulation and Closure of the Jaws.

(*Continued from page* 1064).

The first case in which I performed Esmarch's operation was that of a boy aged 15, who was sent to be by Mr. Martin, of Portsmouth, in 1862, with complete closure of the jaws, the result of the contraction of cicatrices within the mouth following extensive necrosis. The cicatrices had been divided, and his mouth screwed open in 1856, but without permanent benefit, and he obtained his food by rubbing it between his teeth, or by putting it through an aperture between the teeth

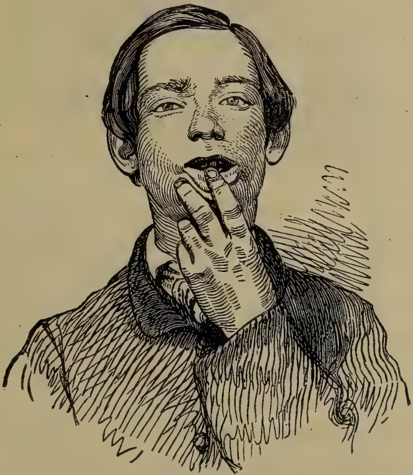

Fig 58.

on the right side. The mouth was firmly closed, the teeth overlapping ; there was a cicatrix at the right angle of the mouth, and a dense band could be felt within the mouth on the same side. Fig. 58 shows his condition on admission. I made an incision two inches long upon the lower border of the jaw, in front of the right masseter, and removed a wedge of bone measuring rather more than a quarter of an inch along the upper, and half an inch along the lower border. The piece contained the mental foramen. The mouth could now be freely opened, and the boy was discharged at the end of a month, able to open his mouth, as seen in Fig. 59; the distance between the teeth being seven-eights of an inch.

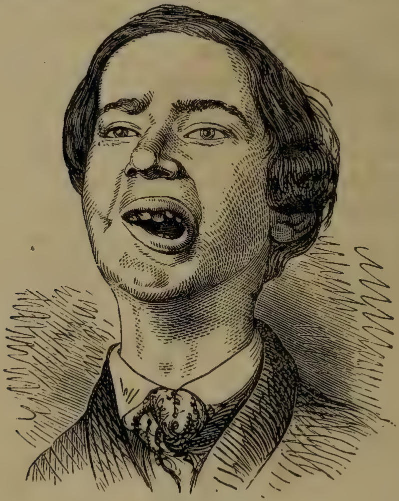

Fig. 59.

The second case in which I operated in the same manner was complicated by the presence of a dense cicatrix, occupying nearly the whole of the cheek of the affected side. The angle of the mouth had also given way during a recent attack of fever, and the patient presented the unsightly appearance shown in Fig. 60. The patient was aged 23, and the sloughing and contraction occurred at the age of 6. She was sent to me by Mr. Bullen, of the Lambeth Infirmary, in January, 1864. I made an incision along the border of the jaw, and, as in the former case, removed a wedge of bone measuring seven-eights of an inch along its lower border. This also contained the mental foramen. The patient's mouth could now be opened to the extent of half an inch. I made two subsequent attempts to remove the deformity of the cheek by plastic operations, but only succeeded in restoring the commissure of the lips, the vitality of the cicatrical tissue being too low to admit of its uniting with other tissues. At the time of her discharge the commissure of the lip was half an inch in breadth; and with a piece of plaster over the opening which was left behind it, the patient was very comfortable. Fig. 61 shows her condition at this time with the mouth open.

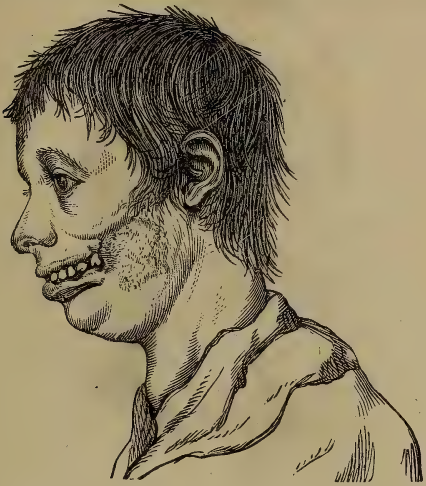

Fig. 60.

With regard to the permanence of the relief afforded in these cases, I may mention that B. B., the boy on whom I operated in July, 1862, continues in perfect health, and is able to take plenty of nourishment, although the movements of the jaw have very decidedly diminished, owing, apparently, to contraction of the fibrous tissues around the new joint, due, as the patient and his mother believe, in the first instance, to the cold of the severe winter following the operation, from which he suffered considerably.

In March, 1865, I had the boy up from the country, and found that the space between the left molar teeth had diminished from seven-eighths to one-eighth of an inch, and that between the left lateral incisors, from five-eighths to a quarter of an inch. The movement was still free enough to show that osseous ankylosis had not taken place in the new joint; but whether the contraction was due simply to changes at that point or to the contraction of some band it was impossible to determine, as the boy positively refused all interference, either with or without chloroform. In this case, however, I believe that I was not sufficiently careful to make the section of the bone entirely in front of the cicatrices, a point I bore in mind in the second operation.

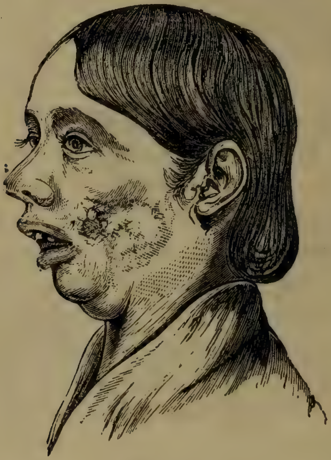

Fig. 61.

The second patient, E. J., is in perfect health, and has good use of her jaw. I saw her at Plymouth, in April of this year, in good health, and with perfect movement of the joint. The opening in the cheek remained the same.

In 1883, I again performed the operation in University College Hospital, on a woman, aged 32, who was kicked by a horse on the right side of the face, when 11 years of age, since which she had had more or less closure of the jaws. The teeth were firmly closed, the lower incisors being forced outwards. It was clearly a case of ankylosis of the temporo-maxillary articulation, and I should have preferred to operate in that region but for the patient's anxiety to be relieved as soon as possible, in order to return to her family. She recovered, with good use of the jaw.

In connection with this subject, and to show the pathological result of the proceeding, I may refer to the following account of the *post-mortem* examination of a case of Esmarch's operation, read before the Société Impériale de Chirurgie, September 5th, 1886. M. Boinet showed the lower jaw of a girl who had closure of the jaws, from cicatrices resulting from cancrum oris. Rizzoli's operation had been performed at the beginning of 1860, but failed at the end of twelve months. In 1863 a wedge was removed with perfect success. She died of phthisis in 1866.

"The right ramus of the jaw is deformed, being shorter and broader than on the opposite side. The condyle and the coronoid process are less separated and shorter than on the left side, and the sigmoid notch is shallower. The left temporo-maxillary articulation has lost much of its mobility, and the ligaments are shortened. The sections had been made in the middle of the body of the bone, the angle being intact. The lower border of the jaw presents a difference in length of one centimètre and a half between the two sides, which corresponds to the breadth of the wedge of bone removed at the operation. The osseous tissue of the ascending ramus appeared reddened ; the dental nerve was natural at its entry into the inferior dental foramen. Between the two portions of the jaw there exists a very complete false joint, which is permanent three years after the operation ; it is very mobile, and the parts which serve as the hinge are fibrous and stretched so that the middle portion of the jaw can fall ; during life this was sufficient to allow easily the introduction of the forefinger into the mouth. The fibrous tissue which unites the bones occupies the whole interval between the bones, and extends for the whole depth of the jaw. Its breadth appears to be quite half a centimètre, and its strength uniform."—*Gazette Hebdomadaire*, October 12th, 1866.

In a few cases of bilateral ankylosis it has been thought advisable to perform Esmarch's operation on both sides of the jaw. Thus Dr. Maas, of Breslau, relates in the *Archiv.*

fur Klin, Chirurg. (Band xiii, Heft 3) the case of a man, aged 27, who was admitted into hospital with ankylosis of the jaw on both sides. It had come on after an attack of scarlet fever when he was seven years old, being preceded by severe pain in the part; and since the age of ten he had not been able to move the jaw at all. The secondary dentition was attended with great difficulty in the removal of the milk teeth; and the new teeth were irregularly developed, and for the most part were displaced laterally. The patient, on admission, was of anæmic appearance, though in moderately good condition; the lower jaw was imperfectly developed. Speech was somewhat muffled, but was quite intelligible. Not the least movement of the jaw could be produced under anæsthesia. Herr Middeldorpf operated on the right side, removing a wedge-shaped piece of bone, as recommended by Esmarch, near the angle. The result of this was the formation of a false joint, with power of opening the mouth passively to the extent of about an inch. Between four and five months later, Dr. Fischer performed a similar operation on the left side; four months after this, the patient could voluntarily open his mouth without pain to the extent of about an inch and a quarter, and his general condition was much improved.

The treatment of cicatricial contraction within the mouth by simple division has been proved over and over again to be worse than useless. The difficulties experienced in these cases, and the failures which so often accompany the methods employed, induced Dr. Ewing Mears, of Philadelphia, to make an effort to effect division of the dense tissue by means of a ligature, believing that reunion could thus be partially, if not completely, prevented.

Having armed a strong-handled needle with a double-twisted, carbolised silk ligature, Dr. Mears passed it from the angle of the mouth backward between the integument and the outer surface of the cicatricial mass, and caused the point to emerge just behind the last molar tooth of the lower jaw. In this manner he surrounded the cicatricial tissue with the ligature, which was tied loosely and moved each day for a week, so as to establish a canal which would not readily close.

At the expiration of a week, Dr. Mears tightened the ligature slightly, and every third day for the next two weeks made slight torsion, passing a probe meanwhile along the track of the ligature. In this way the dense tissue was slowly divided, union not taking place at the bottom of the wound, and the jaws were separated three-quarters of an inch, sufficient for all practical purposes. The patient went to his home in the country, and four months later returned.

When suitable apparatus is adapted to the jaws, so as to prevent re-contraction, a very good result may, with patience, be produced in cases uncomplicated by destruction of the cheek itself. Fig. 62 shows a sketch of the mouth of a woman who had cicatricial bands on each side, binding the cheeks and gums together so that she was able only to separate the lips, and in whom division of the cicatrices had been practised in childhood. The lower jaw was edentulous, but the upper front teeth remained, and Mr. Felix Weiss succeeded in adapting a small lower denture so as to antagonise the upper teeth and prevent the further contraction which appeared imminent, at the same time greatly improving the patient's power of articulation (This Journal, May, 1880.)

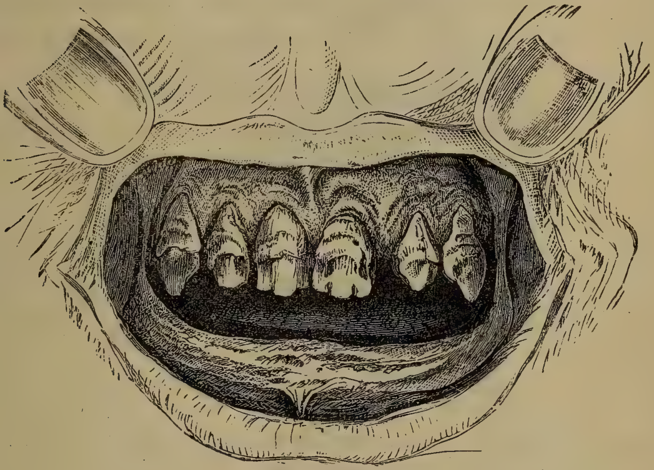

Fig. 62.

The great drawback to treatment by division of bands, and one with regard to which it contrasts unfavourably with Esmarch's proceeding, is the amount of pain which the patient must of necessity undergo during the after-treatment. It requires no small amount of courage on the part of the patient, and some determination on the part of the attendant to carry out the necessary manipulations within the mouth, more particularly during the first few days after the operation; and even after the shields are fitted to the mouth, they cause some pain and inconvenience, to which only those who have arrived at years of discretion will submit.

Fig. 63 shows the form of the silver "shields" adapted to the upper and lower jaws by the late Mr. Clendon, formerly dental surgeon to the Westminster Hospital, in a case of Mr. Barnard Holt's. The patient was a girl aged 17, and was under Mr. Holt's care in 1862, having five years before had fever, with an abscess of the cheek on the right side, which led to such contraction and adhesion of the mucous membrane to the jaw as to cause great difficulty in opening the mouth. Some attempts had been made to open her mouth by the screw, &c., and in 1860 Mr. Holt divided some of the cicatrix with temporary benefit. Mr. Holt now divided the cicatrix within the cheek freely under chloroform, and encountered a firm plate of bone extending between the alveoli of the two jaws, which necessitated the use of a saw for its division. Mr. Clendon subsequently fitted the above-men-

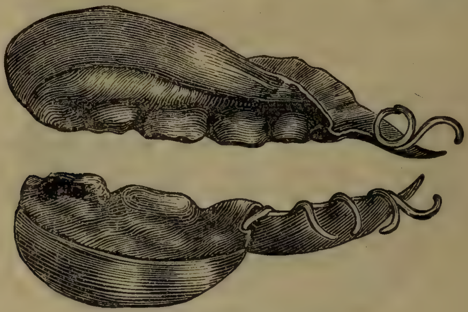

Fig. 63.

tioned shields to the teeth, and wedges were gradually introduced between them to separate the jaws. This treatment was continued for three months, when she was able to open the mouth to the full extent, as seen in Fig. 64.

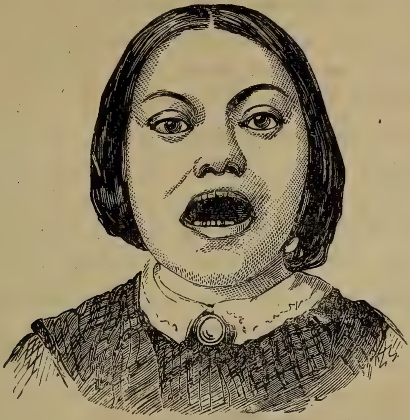

Fig. 64.

The effect of the use of shields seems to have been not merely to prevent adhesions between the inside of the cheek and the alveolus, but to re-establish, to a great extent, the sulcus of mucous membrane at the base of the alveolus, upon which so much stress is laid by Professor Esmarch. Surgical experiences in cases of ruptured perineum, &c., shows how soon mucous membrane is reproduced where it has once existed, or even appears on adjacent parts where its presence gives rise to inconvenience ; and there can be no question that in this case the mucous lining of the cheek has been reproduced to a great extent, and particularly near the lower alveolus. Esmarch's theory, that there must be some portion of old mucous membrane remaining which afterwards becomes stretched, is certainly untenable at least, as regards this case for without doubt the whole lining of the cheek and the outside of the alveoli were perfectly raw, owing to the division of the firm cicatrices.

The cause of non-success in former attempts at mechanical appliances is to be found, I think, in the fact that they have all been directed simply to keeping the jaws apart, without any reference to the re-establishment of the mucous lining of the cheek, upon which, as Professor Esmarch says, the movements of the jaw so much depend. That the success in the foregoing case depended upon this is proved, I think, by the existence of a firm band in the cheek which would effectually control all movement were its extremities attached to the two alveoli ; but as it is, it gives no inconvenience, and will in all probability undergo atrophy in the course of time.

At the Odontological Society, in June, 1864, Mr. Cartwright narrated a very similar case of contraction (with the exception that there was no bony bridge between the alveoli) in a woman, aged 38, which he successfully treated by similar means, using wedges of vulcanised india-rubber affixed to the shields to obtain the necessary extension.

The occurrence of an osseous lamella or bridge between the two jaws is a rare but not unique occurrence. In the *Medical Gazette* of July 4th, 1845, Mr. J. G. French has reported and figured an excellent example of ankylosis produced by a bridge of bone, which occurred under his care at the St. James's Infirmary.

The patient was aged 22 at the time of his death, and the closure of the jaws dated from infancy. He was fed through an aperture made by the removal of the incisors on the left side. At the age of 14, an operation for his benefit had been undertaken by an eminent surgeon, and incisions in the mouth had been made with this object, but without any good result. On *post-mortem* examination, the jaws were perfectly united on the left side, and only the smallest degree of motion was possible on the right; the soft parts were removed and the base of the skull was macerated, when ankylosis was discovered to exist between the upper and lower jaws on the left side, the ramus of the inferior maxilla, immediately internal to the mental foramen, extending upwards by a broad thin plate, and uniting with a corresponding plate of the superior maxilla, a cartilaginous material forming the bond of union. The articulation of the jaw was normal.

Mr. Trueman also mentioned in the discussion which followed the narration of Mr. Cartwright's case (*British Journal of Dental Science,* June, 1864) that he remembered seeing in the Museum at Berlin a very curious case where cicatrices existed on both sides of the mouth, which were completely ossified, so that the preparation showed the two jaws united by filaments of bone, on either side of the jaw externally.

Subsequently to Mr. Holt's case, I had under my care a patient with a very severe form of contraction, namely, on both sides of the mouth. The patient was aged 18, and the contraction dated from her fifth year, when she had fever. Various attempts had been made to give her relief by dividing the cicatrices and using wedges, etc., without benefit; and when she came under my care she had no power of separating the jaws at all, and the cheeks were firmly attached to the alveoli from the angles of the mouth. Having secured Mr. Clendon's co-operation, I freely divided the cicatrices, and after repeated trials that gentleman succeeded in fitting in shields resembling those used in Mr. Holt's case, but reaching over both sides. It was found necessary to extract all the teeth, and after more than three months' assiduous care and frequent modification of the shields, the patient being constantly placed under the influence of chloroform for the purpose, a very satisfactory result was obtained, there being exactly one inch between the metal shields in the incisive region, which would have left about half an inch if the teeth had been *in situ.*

Having thus shown that closure of the jaws depends upon various causes, and is amenable to various methods of treatment, of which I have had personal experience, I think I may venture to contrast these methods.

In cases of cicatrix, I give the preference to Esmarch's method of removing a wedge from the lower jaw on one or both sides. The operation is a comparatively easy one, and in cases where only one side of the jaw is affected, restores the patient a very useful though one-sided amount of masticatory power in two or three weeks, and with very little suffering or annoyance.

In cases of fibrous ankylosis of the temporo-maxillary joint it may be worth while to try division of the adhesions, and, failing that to resect the condyle.

In cases of bony ankylosis of the joint, division of the ramus of the jaw beneath the masseter appears to me the least dangerous and most satisfactory proceeding.

SWALLOWING ARTIFICIAL TEETH.

By Geo. W. Eglinton, L.R.C.P. Ed., &c.,
Dalton-in-Furness.

On Friday, October 21st, 1887, about 8 a.m., I was called to see Mrs. B——, residing in this town, the messenger stating that she had swallowed her artificial teeth. On my arrival I found her sitting by the fire, and apparently pretty comfortable. She stated that she was in the habit of sleeping with the teeth in her mouth, though frequently warned by her husband as to the danger in so doing; but, as she said to me, "she could sleep better with them in." They comprised the four upper incisors, with a composition (red) plate fitting half the upper palate. On awaking that morning she found them in her throat and was *obliged* to swallow them. She also stated that the plate did not fit very well, it being loose, and was very thin, facts which I verified on after examination. She complained of pain in the epigastrium and between the shoulders.

I passed the horsehair probang down the œsophagus into the stomach, and gently moved it about in the stomach, to try if possible to entangle the teeth in the horsehair and thus extract them, but was unsuccessful. I repeated the operation three times unsuccessfully. I then administered an emetic, consisting of one scruple of ipecacuanha powder and ten grains of sulphate of zinc in a cupful of warm tea, and directed the patient to eat a few figs, which she did.

Having to leave to attend a case in an adjoining street, I called about an hour afterwards and found that she had vomited the set embedded in the figs. During the after part of the day she complained of the former pain between the shoulders and in the epigastrium and was unable to lie down. Relief was obtained by ten drop doses of tincture of opium and hot poultices applied back and front. On calling the next day I found her free from all pain, and to all appearance perfectly well; and on a later visit ten days afterwards, she stated that she had felt no further inconvenience from her mishap.

As seen from a subsequent examination the edge of the plate was very sharp indeed, and the wonder is that she did not suffer more.

CLEFT PALATE.

By Mr. R. H. Bates.*

Perforation of the roof of the mouth arises from two distinct causes.

1st. From congenital deficiency.

2nd. From accidental causes, *i.e.*, from disease or from mechanical injnry, as from gun-shot wounds, etc.

Strictly speaking *cleft palate*, that is to say a fissure either wholly or partly dividing the vault of the palate, is nearly always congenital.

The origin of *cleft* palate lies in an arrest of development, or in other words in a persistent fœtal condition. This may be easily seen by glancing for a few moments at the development of the face and jaws.

At an early period in the development of the embryo, the processes called visceral arches grow up on each side of the rudimentary cranium and vertebral column. These processes grow forwards and inwards till they meet and join together in the middle line. The lower jaw is formed round the distal end of the first visceral arch, which contains the cartilaginous rod known as Meckel's cartilage.

The maxillary processes (forming the maxillary and malar bones) appear as buds near the proximal end of this first arch. The upper part of the face in the middle line is formed by the fronto-nasal process. This process, which is double, grows downwards from the forehead forming the nose and pre-maxillary bone. The mouth is formed by a dipping in of the epiblast between the maxillary and mandibular processes.

When the two maxillary processes fail to unite we have a fissure of the soft palate, and of the hard palate as far forward as the inter-maxillary bone. In those cases in which the fissure extends completely through the hard palate it is usually deflected to one or both sides. This deflection has been generally supposed to be due to the failure of the maxillary to unite with the inter-maxillary bone, but Albrecht and Turner have shown that the fissure rarely extends along the maxillo-intermaxillary suture, but that it is almost invariably to be found in the substance of the pre-maxillary bone. They account for this fact by saying that the cleft follows the course of a new suture which they claim to have discovered in the pre-maxillary. If the fissure follows the suture on each side we have a Y- shaped cleft and the anterior part of the pre-maxillary bone is merely separated from the nasal septum.

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* A Paper read before the Dental Students' Society, London School of Dental Surgery, Leicester Square.

Although the cleft is usually deflected either along the old pre-maxillary suture or the new suture of Albrecht and Turner, cases are occasionally met with where it is median in the whole of its course.

Whatever may be the cause, it is certain that the arrest of development occurs at a very early period of fœtal life, as under normal conditions union of the parts is found to be complete by the end of the tenth week. The fissure may be so slight as to be a mere bifurcation of the uvula, or it may be a complete Y- shaped cleft. Between these two extremes congenital cleft offers an endless variety of forms.

Various theories have been advanced to account for this arrest of development.

It is almost universally acknowledged that it is to a certain extent hereditary, but we are still at a loss to account for the first departure from the normal. Dr. Engel holds that the deformity is due to excessive breadth of the anterior part of the cerebrum ; but on the other hand it is more frequently found in connection with a small and defective cerebral development, although we often find it associated with a large well-developed brain and a very high order of intelligence. Dr. Ogle has called attention to the fact that a large percentage of the lion cubs born in the London Zoological Gardens have fissured palates. This he attributes to their being fed on the meat of large animals only. He says that since they have been given a goat twice a week, which they can eat bones and all, the percentage of cleft has markedly decreased. Mr. Bland Sutton mentions a somewhat similar case of a Scotch terrier bitch, who, after having a number of litters of perfectly formed pups, suddenly took to having a succession of litters with fissured palates. Mr. Sutton's explanation is that the animal had been exhausted by over-breeding, and consequently she could not furnish lime salts in sufficient quantity to complete the skeletons of her progeny. As, however, the palate is formed entirely in embryonic tissue before ossification commences, this explanation seems insufficient, nor is it clear why a simple want of bone-forming material should affect the palate more than any of the other cranial bones.

Mr. Sutton has also suggested that cleft palate may be an instance of reversion or atavism. He says, "In fish the buccal and nasal cavities are a common chamber. In lizards and most birds, the hard and soft palates are normally cleft, and in the young kangaroo the uvula is bifid." Few people now-a-days question our descent from some lower form of life, but it requires a considerable stretch of imagination to believe that persons suffering from a cleft palate owe it to a reversion to such very remote ancestors as the kangaroo and canary birds.

The loss of tissue from accident or disease rarely bears any resemblance to congenital cleft. It may be simply a perforation, or it may involve the total destruction of the velum and greater part of the maxilla.

Perforation may result from gun-shot wounds, the stem of a pipe, &c. being driven through the roof of the mouth, struma, or syphilis; the last being the most common. Syphilitic ulceration leading to perforation of the palate, usually commences in the nose, and thus perforation is generally effected very rapidly after the palatal affection is noticed. Mercury pushed to extremity often leads to necrosis of the bones and thus causes perforation. Syphilitic nodes may appear on the palate, and in that case the perforation will exactly correspond to the margins of the node.

There is seldom any difficulty in distinguishing between congenital and acquired cleft. Congenital is symmetrical and as far forward as the premaxillary bone approximately median, and the margins of the cleft are healthy, whereas in acquired cleft (syphilitic) the margins usually have a thickened and unhealthy appearance, the two sides of the cleft are rarely symmetrical and the perforation is not necessarily anywhere near the middle line. A peculiar funnel-shaped appearance due to the bevelling off of the palatal towards the nasal surface is a useful diagnostic sign of acquired cleft.

The evils arising from cleft palate are:—

(1st) Defective speech; and this is the greatest evil.
(2nd) Retarded development, owing to inability on the part of the child to take the breast properly.
(3rd) Chronic inflammation of the mucous membrane of the nose from exposure to the air.
(4th) Distortion of the subjacent tissues from the extraordinary strain that is put upon them.
(5th) The passage of food into the nose. In cases of acquired cleft, coming usually in adult life, very great inconvenience arises from this cause; but in congenital, practice and the modification of the adjacent tissues generally does away with all trouble of this kind.

The treatment is of two kinds, surgical and mechanical. Each method has its advantages and disadvantages, but I think the balance is greatly in favour of mechanical treatment, in the majority of cases.

As congenital cleft, which is, as a rule, the only kind curable by surgical operation, gives rise to but slight inconvenience beyond the defects in speech, it is to the correction of these defects that our chief efforts must be directed. Now it is absolutely essential to perfect vocal articulation that the treatment shall be such as will allow the nasal passages to be shut off, at will, from the mouth, and staphyloraphy utterly fails to meet this requirement. Owing to the contraction of the cicatrix the velum is shortened from before backwards, besides being strained across as a tense band from side to side, consequently a wide space is left between it and the wall of the pharynx, which no effort of muscular contraction can close, and the last state of that patient is certainly no better than the first so far as the voice is concerned.

The only case in which operative treatment is likely to be successful is when the edges of the cleft are not very widely separated and when the operation is performed at an early age, as during growth nature may feel and make some provision to supply the deficiency.

The objection to a mechanical appliance is that, at present, we cannot obtain any material suitable for an artificial velum which is sufficiently durable. The consequence is that the unfortunate patient is dependent upon some one else for his speaking apparatus, and therefore for his very means of livelihood in many cases, and should any accident happen to the appliance he is incapacitated for business for several hours or even days whilst it is being prepared.

Congenital cleft may be treated by either method or by a little of both ; that is to say, the fissure in the velum may be closed by an operation, leaving the hard palate to be covered by an obturator. Acquired cleft is nearly always treated mechanically.

In most cases the soft palate will be found too sensitive at first to admit either of an impression being taken, or an operation being performed upon it. To overcome this it should be painted with a solution of glycerine and tannin applied with a brush, the action of the brush being almost as beneficial as the preparation used.

STAPHYLORAPHY

Was first performed by a French dentist named Le Monnier, in 1764, and subsequently by another Frenchman named Roux in 1819.

Sir William Ferguson was the first to point out the action of the muscles of the palate in drawing the edges of the cleft apart.

Up to his time the operation had been simply to pare the edges of the fissure and to draw them together with sutures. Ferguson first divided the levator palati by passing a curved lancet through the fissure and cutting deeply into the posterior surface of the velum. He then seized and drew forwards the uvula, putting the pillars of the fauces on the stretch, which he then snipped across so as to divide the palato-pharyngeus and palato-glossus, thus completely taking the strain of the muscles off the sutures. He then pared the edges of the fissure and applied sutures in the same way as the older operators.

Pollock's method of dividing the levator palati muscle seems much easier of performance. Instead of dividing the muscle from the back, he pushes the point of the knife through the palate just internal to the hamular process, which can easily be felt by passing the finger beyond the tuberosity of the maxillary bone. Then by raising the handle and depressing the point of the knife the muscle is easily divided.

The operation to close the fissure in the hard palate was invented by Dr. Warren of Boston. It is performed in several ways ; one method is to make an incision completely through the bone along the inner alveolar wall and then by slightly lowering the vault of the palate, the edges may be drawn together with sutures. Another method is to simply pare the edges of the fissure at the junction of the palatal and nasal mucous membranes, and then to dissect the soft covering off the bones by means of curved knives or spatulas ; taking care not to puncture the mucous membrane. The structures will then hang down from the roof of the mouth the two halves usually meeting, or even overlapping each other. The edges may then be pared and united with a few points of suture. If, however, the fissure is very wide and there is any difficulty in bringing the edges together, the tension on the sutures may be relieved by making several longitudinal incisions along the inner alveolar wall. The necessity of dissecting the periosteum off the bones with the mucous membrane, in order that it may eventually form a bony roof to the mouth has been strongly insisted upon. As, however, it is almost impossible to dissect the mucous membrane away without the periosteum, it seems almost needless to have made this so great a point.

When the premaxillary bone is entirely separated from the rest of the palate, and is simply suspended from the vomer, it is generally protruded far beyond the natural arch. In order to get it back into place, it is usual to bend it back by pressure, or even to break its narrow neck and then force it into place. It has been proposed to cut a piece out of the neck by which it is connected with the vomer and then fix it in position. Sir W. Ferguson, however, used to strongly recommend the entire removal of the projection in many cases, especially when it is complicated with double hare lip.

The mechanical treatment is of two kinds ; first, by means of an obturator, second, by an artificial velum. An obturator is used to simply cover over a perforation. The first obturator of which we have any authentic record was by Ambroise Paré in 1541. He quaintly describes the method of overcoming the evils of a perforate palate thus :—

"It must be done by filling the cavity of the palate with a plate of silver or gold a little bigger than the cavity itself. But it must be as big as a French crown, and made like unto a dish in figure and on the upper side, which shall be towards the brain, a little sponge must be fastened, which, when it is moistened with the moisture distilling from the brain, will become more swollen and puffed up, so that it will fill the concavity of the palate, that the artificial plate cannot fall down, but will stand fast and firm as if it stood of itself."

Modern experience has, however, proved the mistake of allowing any part of the obturator to pass through the perforation for the sake of support, as any pressure against the sides of the cleft causes absorption and thus the size of the opening is increased. Cases are on record in which patients suffering from a perforate palate, have indulged in a little home-made obturator and have closed the opening with a cork or a bundle of rags, etc. This resulted in absorption of the sides so that the cork fell out, when tape or cotton was wound round it to make it fit, and thus the size of the perforation has been gradually increased until nothing has been left of the hard palate but a portion of the alveolar arch. Moreover, it is a certain fact that in many cases of acquired cleft, where the opening has been simply bridged over, healthy granulations have been set up so that the opening has been entirely closed.

In extreme cases of congenital cleft it is usual to close the fissure in the hard palate with an obturator, and that in the soft palate with an artificial velum.

A German named Suersen has described an obturator for cleft of the soft palate which is made entirely of hard rubber.

This obturator, which is made in one piece with the plate covering the hard palate, is of considerable thickness, and is carried well into the cleft not overlapping its margin at all. When placed in position in the mouth the lower surface of the obturator is just on a level with the remains of the soft palate, if relaxed. When the soft palate is drawn up by the action of the levator muscles the margins of the cleft are still in contact with the obturator owing to its thickness. Suersen depended upon the contraction of the superior constrictor of the pharynx to shut off the nasal passages during articulation.

Kingsley, however, says that speech cannot be *learned* with an obturator of this form, but that after the voice has been perfected by means of a velum, an obturator may be substituted. The advantage of an obturator is, of course, its greater durability. It also gives a better tone to the voice. If a Suersen obturator is used, or if for any reason it is decided to carry the obturator into the fissure, the bulb should be made hollow in order that it may be as light as possible.

To do this, when the wax is removed from the flask and the moulds are ready for packing, press the rubber against the sides and floor of the bulb; then half fill the bulb with water and place a sheet of rubber over it, making it quite air-tight by means of a little chloroform and a hot spatula. The expansion of the steam in vulcanising will force the rubber against the sides of the mould. After vulcanising the water is easily removed by drilling two holes in the bulb and blowing it out. The holes in the bulb can then be closed by screwing in a little gold pin, or even with a little peg of vulcanite.

ARTIFICIAL VELA.

The soft palate is required to move up and down in the acts of deglutition and articulation ; therefore it seems to stand to reason that the appliance to supply the lost tissue should be moveable. This mobility can be obtained either by allowing a hard rubber velum to work on a hinge, or by making the velum of elastic rubber.

Mr. George Parkinson was the inventor of the hinge method. He made a plate of gold fitting accurately to the hard palate, and extending back to the anterior margin of the velum. He then made a second plate of highly polished hard rubber fitting the remains of the soft palate in such a manner that the margins of the cleft could approximate behind it. No part of either velum or front piece was carried into the fissure. The two plates were connected by means of a hinge. In order to keep the velum in place, one end of a delicate gold spring was fastened to it, the other end being fixed on the nasal surface of the gold plate. I do not intend to describe the method of making an artificial velum of elastic rubber, as the description would take up far too much time, and it is familiar to all of us.

In cases of acquired cleft, perfect speech is usually restored immediately on the insertion of the artificial palate ; occasionally, however, it happens that the vocal cords are affected by the syphilitic ulceration, and then the operator and patient are much disappointed to find that speech, although improved, is by no means perfectly restored by means of the artificial palate. In cases of congenital cleft, the patient has to be taught to speak with the help of the plate, just the same as he would have to learn any musical instrument, and anything such as singing, &c., which distracts the attention will be found very useful in effecting this.

British Journal of Dental Science,

LONDON, DECEMBER 1st, 1887.

ZANANA WORK AND DENTISTRY.

The action taken by the National Dental Hospital, whereby lady students are allowed to attend its courses of instruction, and so accomplish the required curriculum for examination by the Royal Colleges, has initiated a very novel departure in the ethics of dentistry. When the announcement first obtained publicity the lower stratum of the lay-press following its worst "bow-wow" inclinations flooded its sheets with silly verses and coxcombical allusions to the "lady dentist." This buffoonery, with its sickly attempts at smartness, has tended in some way to obscure the really valuable move the National Dental Hospital has made. For many years now, a work of love carried on against terrible odds, in spite of a trying climate, opposition on the part of fair-weather friends and honest foes, has been persevered in among the female population of India. Englishwomen, cultured, and in many instances, highly qualified, have undertaken to labour for the physical and moral welfare of their Asiatic sisters, and their efforts have prospered. Special training in the simpler procedures of Medicine, Midwifery and Surgery has enabled these ladies to bring relief and comfort to many a sufferer, and has greatly aided in consolidating the position and efficacy of the Zanana Mission. In dentistry, up to the present time, there have been no facilities for lady-students to acquire anything like proficiency. The absence of such facilities has been a source of considerable annoyance, and has crippled well-meant enterprise on the part of the students. The ladies have been only too willing and eager to acquire useful, nay necessary knowledge, and yet the doors have been closed against them.

This impediment to train women in dental work has now been removed, and we may reasonably hope that, ere long, several will have had the facilities for which they asked and will have had the opportunity of testing their abilities in dental matters. It seems probable, that the majority of women who take dental diplomas will drift into Zanana or kindred work, but some it may be, will practice in the "old country" and will, as the exponents of gynæphobism would say, "compete with men." How far women will excel in dental work, of course remains yet to be proved; as we pointed out upon a former occasion, there are very many departments included under the common name of dentistry, which one would *a priori* deem peculiarly suited for womanly deftness of touch and precise accuracy of finish—finnicking work at which the female adept would presumably be most expert. Woman's physique and lack of muscularity would possibly prove insuperable barriers to her full success, debarring her from the fatiguing labours a busy dentist renews day by day and week by week. Still the experiment is worth the trial for those, who can afford to run the risk of a possible ultimate failure. With the case of the Zanana Mission, things are far otherwise, no fear of loss of time, energy or money can there be entertained; on the contrary, a certainty that whatever expertness is attained, whatever modicum of knowledge is acquired, will help alleviate the woeful sufferings of a section of Indian Society which must appeal to the sympathies of all Englishmen and women.

A race conquered in the first instance for mere greed of acquisition, may surely claim the assistance of its vanquisher, when it is her pride to describe herself as a leading nation among civilized races, and may expect to get a more material help than cold eleemosyne offerings or still colder comfort which cries to the empty to be filled, to the sick to be healed. The destitution, as far as dental work goes, among the low caste Hindu women is profound, and as unhappily they are by no means exempt from caries, pyorrhœa, odontalgia, and so forth, the Zanana Mission will be doing a right good work in extending its instruction in the direction of the theory and practice of dentistry. Upon the question, whether or no women do not possess inherent rights to acquire what knowledge is freely granted to men, and be permitted the run of similar lectures, workshops, dissecting rooms or debating forums, it is not our object to attempt to decide: the perusal of John Stuart Mill's essay upon the "Subjection of Women" will enable many to answer it for themselves. As to the difficulty raised that "lady dentists," as our transpontine brethren have yclept women who practice dentistry, are simply incapable, the experience of a few cases of successful female practitioners in America, goes to show that some women at least, can master the details and prosecute with profit to themselves and benefit to their patients, the practice of dental surgery.

WHO SHALL BE UPON THE REGISTER?—The Dentists' Act like charity covers a multitude of sins,—if not sinners. A correspondent sends us a letter from a person who is a candidate for enrolment on the Register—as he puts it. This gentleman took the would-be dentist into his workroom in 187—, "almost as an errand boy."

SMOKING CONCERT OF THE LEICESTER SQUARE DENTAL SOCIETY.—The first of this session's series of concerts took place at Anderton's Hotel, Fleet Street, on Nov. 25th. Under the genial presidency of Mr. Frederic Canton a most enjoyable evening was passed. Among the performers, was Mr. Harding, who we believe is a "fresh man" at the "Dental" and who is far from a novice at singing, his rendering of the "Fog Bell," and "The Village Blacksmith" was very good, and fully appreciated. Mr. H. Lloyd Williams sang "I am Waiting" very sweetly, while a banjo performance, with piano accompaniment and Mr.

Latchmore's violin solo gave a pleasant variety. The humourous selection was of the usual class and was very funny, especially a stump oration by a gentleman in a sober garb not remotely resembling the mediæval impersonation of his satanic majesty. Several members of the staff were present, including the Dean, who is ever ready to encourage good *play* as he is to insist upon good *work*. The next concert will probably be held in February next.

A PROPÒS.—We have always forgotten to mention that the Leicester Square folks have got an excellent "Athletic Club" in "full working order" and are at present pounding away at foot ball, and for a new club, doing very well under the captaincy of Mr. C. W. Crassweller. The club has its rendezvous at Wormwood Scrubbs and the fixtures are for Saturdays. We recommend any of the "unemployed" among dentists to go down some afternoon just to see that our student friends can use their legs as well as their arms. *Fiat experimentum!* Of the Athletic Club more anon.

THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.—The Medical Staff of this Hospital and lecturers at the Dental School therewith connected, have presented the munificent donation of one thousand pounds towards a fund for the extension of the Hospital's premises. There is still some five thousand pounds needed to meet the required expenses of the undertaking, which the public ought cheerfully to collect, considering the really good work which the dental school in question has for so many years prosecuted. The extension of premises has now become absolutely necessary, owing to the enormous increase in the amount of work carried out in Leicester Square, and the greatly extended daily clinique attracted.

THIS IS COOL! A "DENTAL INSTITUTE" we won't mention which, since we don't wish to advertise it, has been proposed if not formed into a company, and has the assurance to undertake among other businesses "to protect the interests of dentists and the profession of dentistry, to consider all questions connected therewith ; to promote or oppose legislative and other measures affecting the profession ; to collect and circulate statistics and information in regard thereto ; [and here comes the climax] " to act as and to appoint *arbitrators* for the settlement of any disputes in connection with dentistry." According to the late Earl of Beaconsfield, we Englishmen owe much to the children of Israel, but how much, we personally never appreciated until we learned all about this " Institute."!

The Nitrous-Oxide Gas Vice.—A Chemist of Boston, U.S.A., has, according to the *Pall Mall Gazette* placed himself upon a regular allowance of so many cubit feet of Nitrous-Oxide Gas per day. At first he found the sweetish taste of the gas far from agreeable, but this impression diminished with custom. When taken until insensibility was induced the after effects were apt to be unpleasant. In small doses, administered at frequent intervals, it was delightfully exhilarating. By an ingenious arrangement of the reservoir containing the fluid, and of the tube attached, the investigator was enabled to take a whiff occasionally, as often as was necessary to keep him under the intoxicating influence. During these spells, which sometimes lasted for hours, he would experience the most enjoyable sensations. Lapsing at once into a semi-conscious condition, his whole being was permeated with a feeling of ecstatic contentment. Upon taking a fresh breath from the rubber pipe he became aware of a delicions thrill which, beginning at the extremities, seemed to steal through his entire body. This stage was succeeded by one of dreaming. The imagination spread its wings and took flight into the regions of the marvellous. The wondrous landscape of fairyland was extended to view, and fabulous monstrosities walked the earth again. But there was nothing fear-inspiring about these visions, which were always beautiful and pleasurable. So entrancing were they, in fact, that the worthy chemist spent half his time in pursuit of them. In short he became a nitrous-oxide maniac. The vice grew upon him until he was no longer able to continue business. He even begrudged the few minutes required for making the gas to get drunk with. He perceived that the passion was enslaving him. He knew that it was reducing him to poverty and robbing him of his friends. He subsequently went mad.

The above case is not unique. We have known several persons, dentists, medical men and others, who have become addicted to nitrous oxide inhalation as a solace against the "ills to which the flesh is heir." The craving is usually so difficult of satisfaction that no great harm is done, but it is just as well our readers should know to what a terrible end a habit easily acquired may bring its unhappy victim.

PULSATING VESSEL IN THE PHARYNX.—At a recent meeting of the Brighton and Sussex Medico-Chirurgical Society, Mr. Sanderson mentioned a case of a lady, about 60 years of age, in whom a pulsating vessel, the size of a crowquill could be seen and felt between the posterior faucial pillar on the right side, and the posterior wall of the pharynx. The patient suffered from catarrh of the throat and nose. There were no enlarged glands in the neck as has been found in some cases reported by Farlow.

DENTAL LESIONS IN ELEPHANTS.—Prof. Busch, of the University of Berlin, according to the *Independent Practitioner*, made a most astonishing exhibition of pathological changes in the tusks of elephants. Such a collection, we are certain, was never made before. There were abscess cavities in the dentine, pulp nodules half-a-foot long, and many cases of so-called secondary dentine. He showed that he knew what he was talking about when he asserted that the points of the tusks in young elephants are covered with a plate of enamel. Our friend, Mr. John Bland Sutton, F.R.C.S., who seems to know as much about the teeth of "puir beasties" as most folk, may be able to tell us more about Elephants and their troubles. Poor Chuny, if we remember rightly, lost his life through toothache.

Abstracts of Foreign & British Journals.

INDEPENDENT PRACTITIONER.

HARD RUBBER AND CORUNDUM DISCS AND WHEELS.

By George A. Maxfield, D.D.S.

The Arthur discs and wheels are a combination of corundum or emery with shellac. Their softness, causing them to wear away rapidly, is their great objection. Celluloid, gutta-percha and caoutchouc, in combination with the corundum or emery have been tried in order to obviate this drawback. While for this use, celluloid has many serious defects, and is no better than shellac, caoutchouc has been found to possess many advantages over both. Wheels of all sizes, from one inch to forty-eight inches in diameter, and from one-fourth inch to six inches in thickness, made from caoutchouc combined with emery, have been used in the arts and manufactures for over twenty years. These wheels, particularly adapted for use in the dental laboratory, are superior to those which are in general use, because they cut faster and last longer.

Hard rubber and corundum discs, for use in the dental engine, can be obtained at the dental depots, but not stump-wheels made from the same material. The process of making these discs and wheels is a simple one, and every dentist has in his laboratary all the apparatus necessary for the purpose.

He describes his process. The most difficult part is the combining the caoutchouc and corundum or emery. Taking a sheet of black rubber, such as we use for making plates, it is softened over a water bath, not by dipping in hot water. When softened, one side is covered with the emery (No. 90 if for cutting, No. 100 or 120 for polishing), then folded over on itself and passed through a pair of rollers [a common clothes-wringer answers the purpose well], and this repeated until the proper quantity of emery is worked into the rubber. Use 4 parts of emery or corundum to one part of rubber, by weight. The combination of the rubber and emery is not a chemical, but simply a mechanical one.

After the corundum and rubber is properly combined, laying the rubber on a glass slab, and with a roller made by filling a bottle with boiling water, roll it to the thickness necessary for discs and wheels,* and with the same cutters used for cutting sand-paper discs, cut out the discs or wheels.

From scraps from the the tin shop may be cut discs of tin-plate somewhat larger, and stringing the corundum-rubber discs and tin-plates alternately on a wire the size of the screw of the mandrel used in the engine, clamp them together. For this purpose he uses two square pieces of brass plate about one-eight inch in thickness, with four holes in each for as many bolts, and screws them only tight enough to make a pressure. They are now ready for the vulcanizer, and are vulcanized the same as a dental plate. As soon as removed from the vulcanizer, drawing out the wire, as it is more easily removed when hot, cool as rapidly as you wish, and when cold there is no trouble in separating the discs.

If hubs on the discs are desired, take a number of pieces of brass plate, say about three-sixteenths of an inch thick, drill the hole for the wire, and countersink each side the size you wish the hub. By countersinking both sides you will need only half as many brass pieces, as the tin-plate can be used on the flat sides of the discs. To prevent them adhering to the brass, place a place of tin-foil between the disc and brass. After the discs and wheels are vulcanized, true them up by placing them on the mandrel in the engine, and while running it, warm the edge of the disc in a flame of gas or alcohol till it softens, then run it against a pieee of glass or porcelain. To make the stub–wheels roll thicker than the discs. Discs and wheels of different thickness can be vulcanized at the same time, but to vulcanize discs or wheels of different diameters it will be necessary to use heavier plates between them. Large wheels for laboratory use can be made in the same way as small ones.

Discs and wheels for polishing fillings and teeth can also be made from vulcanite or soft rubber, and as the rubber for dental plates becomes hard rubber when vulcanized, it will be necessary to have a special rubber, one containing less sulphur, for this purpose, as the amount of sulphur added to the caoutchouc, and the length of time vulcanized, constitute the the difference after vulcanization, between hard rubber and vulcanite or soft rubber.

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* To prevent the corundum-rubber adhering to the roller, dust a little of the corundnm or emery over the surface.

Literary Notices and Selections.

CONTRIBUTIONS TO THE HISTORY OF DEVELOPMENT OF THE TEETH.

By Carl Heitzmann, M.D., and C. F. W. Bödecker, D.D.S. M.D.S.

II. Development of Dentine.

It is the rule that the medullary corpuscles are at first transformed into a basis-substance, which is as yet destitute of lime-salts. In specimens stained with carmine, this zone of non-calcified dentine assumes a bright red colour, in contradistinction to the calcified portion, which either remains unstained or assumes a greenish tint by the reduction of the chromic acid. Another distinction between the non-calcified and the calcified basis-substance is that the latter has a markedly higher degree of refraction than the former. When we examine such a specimen with high powers of the microscope, we at once become convinced of the identity of the structure of both the non-calcified and the calcified dentine. We observe a markedly reticular structure in both, and in many instances fine filaments, emanating from the dentinal fibres, are seen to penetrate the reticulum.

At the periphery of the dentine, the bifurcations of the dentinal canaliculi and their tenants are always plainly marked. This feature obviously arises from an aggregation of smaller medullary corpuscles than those appearing at a later period of development. At the same time, the reticulum in the basis-substance is more delicate in the region of the bifurcations, and consequently the meshes of the basis-substance appear narrower in the first formed dentine than in that which is formed at a later period. We sometimes observe transverse sections of dentine in connection with longitudinal ones, which are of great interest. Here it is seen that the calcification first starts at the periphery of the fields farthest from the dentinal canaliculi. Thus a comparatively coarse net-work of calcified basis-substance is established, in the meshes of which we observe either an uncalcified basis substance, or unchanged protoplasm, whereas the central portions of the meshes are occupied by the dentinal fibres in transverse or oblique section. The latter appear larger in inverse ratio to the amount of calcareous matter that has been deposited. From their periphery arise the spokes also seen in fully developed dentine which traverse a light rim—the future canaliculus. The border of the canaliculus is often marked by a circular or crescentic formation, possibly the future rim of elastic substance of the dentinal canaliculi.

The line of the non-calcified basis-substance forming the boundary toward the medullary corpuscles, is found to be either straight, stair-like, or slightly wavy. This feature is never observed close to the periphery of the dentine, but always some distance away from it. These wavy contours unquestionably correspond to the globular territories of which the basis-substance is composed. Previous researches on dissolution of the dentine of temporary teeth, in caries and in the process of eburnitis, especially in the latter, have strongly pointed toward the presence of globular territories in the dentine, the same as in bone tissue. The history of development corroborates the presence of such territories, since they are of very common occurrence in developing dentine of man as well as of different animals. Their origin is explained in a grouping together of a certain number of medullary corpuscles previous to their transformation into basis-substance. Each globular territory is pierced by a number of dentinal canaliculi, without the least interruption in their course. The writers desire to lay special stress upon the fact that such territories become conspicuous only after calcification of the basis-substance has taken place. Under the theory that the odontoblasts are directly transformed into dentine, the formation of globular territories was inexplicable. In morbid processes, we observe the globular territories of the dentine breaking up into a number of medullary corpuscles. The history of development teaches us that each territory arises from a number of smaller corpuscles. Thus the formation, dissolution, inflammation and reformation of dentine becomes plain.

Since Czermark has drawn attention to uncalcified fields in the dentine of many teeth, and called them "interglobular spaces," a great deal of speculation has been indulged in to explain this occurrence. Such spaces are never present, as far as the writers have observed, close to the periphery of the dentine, but are always found some distance from the bifurcations of the dentinal canaliculi, and sometimes are scattered throughout the dentine. These spaces filled witha non-calcified basis-substance, or with medullary corpuscles which have not been transformed into basis-substance. The writers often observed within these spaces irregular globular territories, invariably marked by the contours of such territories, but without ever causing a deviation of the course of the dentinal canaliculi.

The origin of such interglobular spaces is traceable to the earliest stages of the formation of the dentine. In exceptional cases even fully developed dentine will appear composed of layers, or faint concentrically arranged marks in the dentine, traversed without interruption by the dentinal canaliculi. Both the stratification and the interglobular spaces are caused by a faulty deposition of lime-salts in the embryonal development of the dentine. Their cause is probably a temporary interruption of deposition of lime-salts, owing to transient ailments of the mother. These rather anomalous formations of dentine again prove that the basis-substance is made up of globular territories, and these again of medullary corpuscles.

The conclusions which the writers have derived from the studies of the history of the development of dentine, are the following:

I. Dentine from the very issue is a formation of connective tissue, first visible in the shape of a knob-like protuberance termed the papilla.

II. The papilla is composed of medullary tissue, holding an irregular myxomatous net-work, originally scanty, but later on freely supplied with arteries, veins and capillaries.

III. Shortly before the formation of dentine—in the fifth month of fœtal life—there appear at the periphery of the papilla elongated corpuscles, resembling epithelia, which are termed odontoblasts. Where the odontoblasts are in contact with an already formed dentine, they send offshoots into the dentinal canaliculi in varying numbers. These offshoots are dentinal fibres.

IV. The odontoblasts are provisional formations of medullary tissue, which never change directly into dentine, and are therefore visible only where no formation of dentine is going on, or at the time of rest.

V. Before dentine is formed, the odontoblasts break up into medullary corpuscles, and the dentinal fibres, before in connection with the odontoblasts, are located between the medullary corpuscles.

VI. The medullary corpuscles are directly transformed into the basis-substance of the dentine, which at first is destitute of lime-salts, but afterward becomes the seat of a deposition of calcareous matter.

VII. The basis-substance of the dentine is composed of globular territories, the origin of which is traceable in groupings of the medullary corpuscles, shortly before the appearance of the basis-substance.

In the fœtus of the cat, the sheep, and the dog, the process of the formation of dentine is the same as in man, in all essential features. The same rule holds good for the history of the development of dentine in swine. In the latter animals, there is a slight discrepancy as compared with man, mainly in the structure of the papilla.

The papilla of a pig fœtus is composed of irregular, branching and partly connecting protoplasmic bodies, somewhat resembling the stellate reticulum of the enamel organ. These corpuscles are uniformly distributed in an abundant mass of basis substance, which, with lower powers of the microscope, appears finely granular. High powers, however, reveal the delicate network essential to all the varieties of a myxomatous basis substance. This tissue is traversed by a moderate number of blood-vessels, mainly capillaries, which showed in some places stages of development, from the original solid cords of protoplasm to the vacuolization and appearance of endothelia upon their walls. Toward the periphery of the papilla, spindle-shaped bodies make their appearance, evidently arising (at least to a great extent) from the living matter previously hidden in the myxomatous basis-substance. By an increase in size of one, or the confluence of several such spindle-shaped corpuscles, the odontoblasts arise, and they are often seen in contact with the already formed dentine. Close study of specimens has satisfied the writers that the odontoblasts do not directly form the basis-substance of the dentine, but are merely transitional formations, here, as well as in men, and other animals.

In the condition of rest, the odontoblasts offer an excellent opportunity to study their relation to the dentine. If they lie against the dentine with a broad basis, four or five offshoots may be seen to enter the adjacent canaliculi, all of which arise from one odontoblast. If, on the contrary, the odontoblasts terminate toward the dentine in a point, a single dentinal fibre will spring therefrom.

Reports of Societies.

INTERNATIONAL MEDICAL CONGRESS.

(Concluded from page 1088)

SECTION IN DENTAL AND ORAL SURGERY.

FRIDAY, SEPTEMBER 9TH—FIFTH DAY—MORNING SESSION.

CLINICS

A very interesting clinic was given by Dr. A. R. Starr, of New York, in capping the exposed pulp of a tooth.

It is only of late years that any progress has been made in so treating and protecting an exposed tooth pulp so as to preserve its vitality. The operation caused the patient very little pain, and all those who have had the opportunity to see it agreed that it was a success.

Dr. William J. Younger, of San Francisco, implanted a tooth. Great diversity of opinion was expressed as to the ultimate result of this method of thus supplying the lost teeth.

Dr. R. B. Adair, of Gainesville, Ga., completed the treatment of a case of pyorrhœa alveolaris.

Thirty-two other gentlemen gave clinics on filling teeth and constructing artificial dentures.

Prof. F. Busch, of Berlin, Germany, read a paper on

THE COMPARATIVE PATHOLOGY OF THE TEETH, WITH SPECIAL REFERENCE TO THE TUSK OF THE ELEPHANT.

A number of specimens were shown by the doctor to illustrate his paper. At the close of his paper the doctor exhibited an instrument for removing the small birthmarks so often found on the face. The instruments have a circular cutting edge ranging in size from one-fourth to half an inch in diameter, and fit into the dental engine. The mode of operation consists in selecting a knife the size of the mark to be removed, and placing it upon it, quickly revolving it. It will take only a moment to accomplish this, and is said to be almost painless. The only dressing the doctor applies is dry cotton, which he leaves in position for from six to eight days, at the end of which time the part is perfectly healed.

Discussion of the paper was taken part in by Drs. Wm. H. Atkinson, of New York, and W. C. Barrett, of Buffalo, N. Y.

Dr. E. Andrieu, Paris, France, read a paper on

THE SIXTH YEAR MOLAR.

The essayist held that the sixth year molar being in development, eruption, and structure an organ of transmission from the temporary to the permanent set, it should be extracted when the permanent teeth are in position. More room is gained by this procedure, and a longer period of usefulness insured to those remaining.

Dr. L. D. Sheperd, of Boston, Mass., The doctor expressed his regret that such sentiments should still be prevailing among the profession. He cited cases from practice, when the extraction of these teeth caused not alone loss of valuable masticating surface, but actual irregularity of the ones remaining.

Dr. Paul Dubois, of Paris, France, stated that he wished the Section to note that the ideas expressed in the paper were not carried out by the dentists in France.

Professor Frank Abbott, of New York, could see no difference in structure between the sixth year molar and the other permanent teeth under the microscope, but a very marked difference was apparent between that and the temporary teeth.

A paper by Dr. Th. David, of Paris, France, on "Aphthous Stomatitis," was read by title.

Dr. J. S. Marshall, of Chicago, Ill., read a paper on

OPERATION FOR THE CURE OF A PERSISTENT NEURALGIA OF BOTH TEMPORO-MAXILLARY ARTICULATIONS, AND REFLECTED PAIN IN THE RIGHT BRACHIAL PLEXUS.

History.—Patient, female, forty-two years of age, was operated on some eight years before for the removal of an osteo-sarcoma of the right inferior maxilla. Extensive suppuration followed, and the wound did not heal for several months. Considerable cicatricial tissue was formed, and the jaw displaced to a considerable extent. Neuralgia dated from the healing of the wound, and the conclusion arrived at was that the irregular position of the jaw was the cause. An operation for the relief of this condition was performed, and the neuralgia ceased. The doctor described the steps of the operation at great length, but failed to show that it differed from methods generally employed.

The following papers were read by title: "Articulation of Artificial Teeth," by Dr. H. L. Cruttenden, of Northfield, Minn.; "Power in Dentistry," by Dr. W. St. George Elliot, of London, England; "Porcelain Filling," by Dr. E. C. Moore, of Detroit, Mich.

Dr. Alton H. Thompson, of Topeka, Kan., read a paper entitled

DOES FUNCTION CONTROL THE EVOLUTION OF STRUCTURE?

Some time since, Dr. C. N. Pierce discussed a subject similar to that at the head of this paper. After noticing the mechanical forces involved in and influencing the evolution of the teeth, he says: "Those cumulative forces are utilized through heredity, and while so potent in tooth-evolution, exert a similar influence in the development and modification of all other structures and organs. All departments of biology recognize the fact that heredity, adaptation, and growth, being of special importance in the evolution of the organic body, must therefore be regarded as especially formative functions. Adaptation to environment might be called the ancestor of function, as function is of organization. Illustrations of modification of structure in response to function are very numerous, in which it is shown how an organ may be completely changed or a mere rudiment be fully developed by the demand for the performance of a function unknown before."

A century ago Lamarck laid down the following laws concerning the development of organic life, which we, with all our accumulated facts, can change but little. In his second law he said that, The production of a new organ in an animal body results from the supervention of a new want continuing to make itself felt, and a new movement which this want gives birth to and encourages. Third law: the development of organs and their force of action are constantly in ratio to the employment of those organs. Fourth law: all that has been acquired, laid down, or changed in the organization of the individual, in the course of this life, is commenced by generation and transmitted to new individuals which proceed from those which have undergone those changes." Altered wants lead to altered habits which result in the formation of new organs, as well as in modification and growth of those previously existing.

In our study of the subject, we will confine our observations to that field in which we, as dental and oral specialists, are most interested, the teeth.

Everything is made for a purpose, and the purpose must precede the thing made for effecting the purpose. Nature plans her work as deliberately as man plans his actions. The means for accomplishing an end are not the cause of execution, but the effect. The organ is the effect, and function is the cause of structure. As food-selection is the cause of the function, so the function of the acquisition and preparation of food is thus the cause of the masticating apparatus.

If function is the cause and support of structure, if an organ develops or atrophies as it is used or disused, if the impulse of active employment dictates the evolution of parts and tissues in succeeding generations. if organs have been suppressed through disuse or remain in various forms as mere rudiments—their function having passed away—then, indeed, must the teeth of man be tending toward final and inevitable suppression.

If in the future of physical education there shall be found a place for education in the accomplishment of masticating food, then, indeed, may the teeth be improved and developed by exercise, as the muscles and lungs are improved and developed.

Owing to the time for adjournment having arrived, no discussion was taken on this paper.

The President congratulated the members on the interest they had shown throughout the session, and hoped great good might come from this Congress, both to the profession and their patients.

A vote of thanks was voted to President L. S Davis for the exertions he put forth in behalf of the dental section.

Also a vote of thanks was offered to President J. Taft and the Executive Committee.

M. C. Gottschaldt, D.D.S., New York.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, Held Nov. 14th, 1887.
H. Lloyd Williams, Esq., *Vice-President*, in the Chair.

The minutes of the previous meeting were read and confirmed.

The following gentlemen were proposed for membership by Mr. H. Williams, seconded by Mr. Bates:—Messrs. J. Turner, Irwin Street, A. W. W. Hoffman, S. C. Bright, R. W. Dickinson, H. Welham, J. B. Hordern, G. N. Moseley, H. G. Harper, H. Pedler, and E. J. Appleton.

The following gentlemen were proposed by Mr. Seymour, seconded by Mr. Bates:—Messrs. F. E. Davar, A. V. Knowles, and E. Preedy.

Mr. J. H. Day was proposed by Mr. J. F. Colyer, and seconded by Mr. H. Williams.

The following gentlemen were then balloted for, and elected members of the Society:—Messrs. J. Dunlop, F. Burton, G. G. Spray, A. B. Dalby, and F. V. Richardson.

Messrs. D. A. Cormack, J. Norris, I. Cohen, E. Parsons, E. L. Eskell, and A. Black signed the Obligation Book and were formerly admitted to membership by the Chairman.

On Casual Communications being called, Mr. Seymour presented to the Society models of a case of greatly overshot-bite.

Mr. H. Williams presented a first upper molar which was unique, in possessing a large pulp stone, and having two distinct canals in both the anterior buccal, and palatal fangs.

Mr. Preedy presented an upper wisdom, possessing five fangs, and exhibiting a small nodule of enamel attached at the neck of the tooth.

Mr. H. Lloyd Williams mentioned a case of an upper six-year-old molar in which there was a distinct grooving of the palatal fang, which he said most probably possessed two canals.

The Chairman then called on Mr. Bates for his paper on "Cleft Palate." See page 1119.

In the discussion which followed Mr. J. F. Colyer advocated staphyloraphy in treatment of cleft palate when the case could be treated at an early age. He spoke of the treatment adopted by Mr. Moon, consisting of a hard vulcanite plate carried as far back as the edge of the hard palate, with a piece of soft sheet rubber sewn on to this. He also advised teaching the patients to accustom themselves to the proper pronunciation of words by continued practice.

Mr. J. H. Badcock advocated the use of Cocaine for reducing the sensibility of the soft palate and adjacent tissues, so that a more accurate impression might be obtained. He also suggested the use of paper pulp (that obtained direct from the paper mills being preferred) for obtaining an accurate impression without displacing the soft parts. The paper pulp should be placed on plaster sufficiently hard to carry it to the cleft. The setting plaster being a hygroscopic substance would abstract the water from the pulp and thus produce a hardening of the same.

Mr. Dolamore narrated a story of a patient who had used rags to stop up a cleft, the rags passed up one by one into the nares until a large quantity were stored away in this manner. The cleft was, of course, greatly enlarged by this treatment.

Mr. Robinson said that he thought one ought to duly consider the height of the arch of the palate before performing staphyloraphy. He would only perform the operation in cases of high palate.

Mr. H. Williams spoke of Mr. Moon's treatment and advocated it in preference to placing anything in the cleft, since granulations might be thrown out and Nature might be able to reduce the size of, if not to totally obliterate, the cleft.

Mr. H. Lloyd Williams spoke of the necessity of obtaining an accurate impression of the parts, and advocated the use of plaster for this purpose, which should be tested before use to ascertain the rate at which setting takes place. He mentioned that when taking a plaster impression, the patient's head should be tilted forward to avoid the plaster falling down the throat. He also agreed with Mr. Colyer in thinking that a dentist was more fitted than a surgeon to perform staphyloraphy, since his fingers were used to working in a small space.

Messrs. Boynton, Seymour, Constant, Dolamore, and Cohen also joined in the discussion.

Mr. Bates then briefly replied.

The Chairman, after he had proposed a vote of thanks to Mr. Bates for his interesting paper, and to those gentlemen who had brought forward Casual Communications, announced that the next meeting would take place on Monday, Dec. 12th, when Mr. Constant would read a paper entitled "The Dentist of the Future."

The Meeting was then adjourned.

To Remove Oil Stains from marble statuary. Make a paste with fuller's earth and hot water, cover the spots therewith, let it dry on, and the next day scour it off with soft or yellow soap.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next Meeting of the Odontological Society will be held on Monday, Dec. 5th, at 8 p.m., at the Beethoven Rooms, 27, Harley Street, W. Business : Casual Communications by Mr. J. Bland Sutton on "some cases of abnormal fissures about the mouth."

Mr. Storer Bennet on "an extraordinary example of odontome."

Dr. St. Geo. Elliott on "some new instruments."

C. W. Penfold on "an antiseptic, fluosilicate of sodium."

Mr. Dennant on "an intersepting bag in nitrous oxide gas administration."

Paper by Mr. E. Lloyd Williams on "Pathology of Alveolar Abscess."

WILLOUGHBY WEISS.
Hon. Sec.

ACTION OF RECOVERY OF FEE BY A DENTIST.

Proceedings were brought by Mr. Goodman to recover 4½ guineas, the value of a set of teeth made to the order of the wife of the defendant, Mr. Joseph P. Owen. The plaintiff's assistant said he saw the defendant's wife in reference to the matter, and supplied her with a set of teeth. They fitted well, and she expressed her approval. As they would not part with the goods without the money, Mrs. Owen left their office when she had tried the teeth for the purpose of going to her husband's office, where she would get a cheque for the amount. This, however, was not forthcoming, and they had seen no more of her. Mrs. Owen went into the witness-box, and said the teeth did not fit. His Honour said it was oath against oath, so he would adjourn the case until January 20th for the jury to determine the issue in fact, whether the teeth fitted or not.—*City Press.*

Correspondence.

[The editor does not hold himself responsible for the opinions expressed by his correspondents.]

DENTAL ADVERTISING.

To the Editor of the "British Journal of Dental Science."

SIR,—I have read the letters of "Molar," Mr. Fletcher, Dr. Waite, "L.D.S.," and "Common Sense," and, having regard to the healthy desire of "Molar" to give up advertising—a desire which I sincerely trust is now more general than is expressed—I venture to hope that the time has at last arrived when something *practical* can be done to extricate the profession as a whole from this ignominious contamination.

We know that much has already been done by the colleges granting the dental diploma under certain restrictions, with a view to suppressing irregularity of practice amongst their alumni; we are also thankful that the learned (dental) societies profess to admit to membership those only who hold aloof from this derogatory procedure; we acknowledge, too, with gratitude, the help of individual practitioners, who are careful to educate their clientele in matters of dental ethics: but what is wanted, Sir, is an authoritative announcement in the leading papers, and in circulars for gratuitous circulation amongst patients at hospitals, &c., preferably emanating from the British Dental Association, and absolutely divested of all specious individualism, or other forms of pseudo-advertising, and plainly stating that the following examining bodies and dental societies (mentioning their names) do not countenance in any shape or form, advertisements, or the public exhibition of dental apparatus.

By this means the British Dental Association would earn for itself the hearty support, as well as co-operation of nearly every respectable and regular dentist in practice, a vast increase in its membership would make it truly representative, and therefore powerful in matters of dental legislation; and even the most flagrant advertisers themselves would materially improve under this disciplinarian regime, because they would soon find out that unmasked and outrageous effrontery was ceasing to be profitable.

I am,

Yours faithfully,

NON-ADVERTISER.

To the Editor of the "British Journal of Dental Science."

SIR,—Your correspondent "Molar" refers to me as a "manufacturer who has probably his own views on advertising." He is possibly unaware that my name remains on the register, and that for many years I carried on a large and successful non-advertising practice, and that I was a member of the Odontological Society, which latter fact was, and no doubt still is, a very definite mark of status in the profession. The fact that I discontinued practice on account of my health does not affect my pronounced views on advertising, which are unchanged.

I quite grasp "Molar's" ideas and desires, but we cannot put down advertising by combination further than to rigidly exclude all so-called advertisers from all dental societies and offices. A man may have his name expunged from the list of licentiates for unprofessional conduct, but this does not prevent him advertising himself as "late L.D.S.," which in one case I know has been done apparently with success. A dentist may advertise his "everlasting adamantine indestructible teeth at a shilling," and may tout from door to door for orders; he may, in fact, do anything he likes, and his name cannot be removed from the register, nor can he be interfered with in any way as regards being able to do exactly as he pleases; the advertising man has the whip hand, and the only way to do anything with him is to turn him out of all societies and meetings, and to ignore his very existence. Things will, no doubt, right themselves as the old generation dies out, and all dentists are of necessity licentiates. An alteration in the law can then be made which will prevent an unqualified man being retained on the register, and the loss of diploma entailing the removal of his name from the register will effectually deter many a "would-be" advertiser. In this matter it is necessary to "make haste slowly" to prevent interference with existing rights, however disagreeable they may be to others.

THOS. FLETCHER.

To the Editor of the "British Journal of Dental Science."

Dear Sir,—I have been much interested with the correspondence in your Journal upon the question of advertising, and I venture to ask of you a space for the communication respecting my views upon it.

I am glad to read the remarks of "Common Sense" asking some questions regarding the value of the British Dental Association.

As I understand it, the object for which that Association exists is to promote the best interest of the entire profession by the checking of advertising and by fostering the highest ethical influences.

The district in which I live, is, like many others, rampant with advertising in every form and it contains several members of the B. D. A. who are constantly proclaiming that they and they only, are those whose practice is being conducted on strictly professional lines.

This, however, I do not quite admit. There are some of those members who advertise and in that matter sail as far as their association will allow them to go, and I think that very few practitioners indeed who have any sense of professional honour desire to go further.

Upon the other hand, I know of some who are not members of the Association, and who do not advertise.

Which of these two are the greatest credit to our profession?

As "Common Sense" remarks, those who are in the Association think that only themselves have any right to be styled professional. Its affairs are mostly managed by a select few, and I, when asked to join, had "Common Sense" enough not to relish the idea of paying my guinea and allowing others to have the fun all to themselves. I believe I am eligible as a member of the Association; I am entirely in accord with its objects and sympathies, but I have not hitherto felt able to join it. I feel that those who do so, should be prepared to forego advertising *in toto*, and rely only upon those methods legitimately adopted by the medical profession. They would then have a perfect right to assume a higher professional standing, without sailing under false colours, as in my judgment they now appear to do.

Yours truly,
"FAIR PLAY."

Nov. 23rd, 1887.

To the Editor of the "British Journal of Dental Science."

SIR,—Your editorial foot note to "Molar's" letter in last issue seems to contain the "gist" of the whole question. I fear, there is but remote possibility of the good feeling of unscrupulous advertisers, causing them to hold a universal meeting and agreeing individually and collectively to abstain from their sin on and after such a date. Yet, unless they so voluntarily purify themselves *as a body*, no one of them will admit he can be at the pecuniary loss of setting the example. Hence, hard, dry, "*persecuting*" legal process, is the only aid available—except time and the gradual influx of educated men of refined feeling and a due regard for the professional position they hold. Now law is not only expensive but also uncertain, and moreover exacts that before an individual is prosecuted it shall be proved that he has transgressed, not the law of ethics, but the *statute law* of the country. Is "advertising" a branch of this law? The general obtaining or attempt to obtain money by false pretences may be, but the simple act of advertising would be difficult to prove to be so. Hence neither the Association nor any other body would have much chance of wholesale clearance of gentlemen whose only hope of life be "flight." Suppose, however, "Molar" righteously paid his subscription—out of his advertising gains—and with the irony of fate, he happened to be singled out for prosecution. Might he not feel himself a very hard used man and declare himself "persecuted" albeit with his own money and sanction. King James when asked by a countryman to make his son a gentleman, replied "I'll make a lord of him, but it takes three generations of them to make a gentleman." "Molar" and others equally well-disposed might take this to heart and by their example, show their earnestness for reform; remembering that the fewer black sheep that remained, the blacker those few will appear by contrast, and the sooner public opinion—the real court of censure and punishment—would discriminate between those and the more or less white ones; but that whilst there are so many *not black* yet *so dirty*, it is impossible to distinguish them from the other, the indiscriminating public has little chance of the purity it desires and the profession *none*.

Yours, &c.,
"STERN FACTS."

British Journal of Dental Science.

No. 478. LONDON, DEC. 15, 1887. Vol. XXX.

ODONTOMES.*

By J. Bland Sutton, F.R.C.S.,

Hunterian Professor; late Erasmus Wilson Lecturer on Pathology, Royal College of Surgeons; Honorary Member of the Odontological Society of Great Britain.

In the most extended sense an odontome may be defined as *a neoplasm composed of dental tissues (enamel, dentine, and cementum,) in varying proportions and different degrees of development, arising from tooth-germs, or teeth still in the process of growth.*

It is customary to restrict the term, at least from the clinical point of view, to those hard tumours found in the jaws, composed of fully developed enamel, dentine, cementum, or varieties of these tissues. Nevertheless, the careful observations made by several workers during the past few years render a reconsideration of the matter imperative; for the term should apply not only to solid dental tumours, but to certain cystic forms as well. This extension of the term is of some importance, for we can then include several curious aberrations of tooth-development.

In the higher mammals three distinct parts are concerned in the formation of a tooth:—

1. The enamel organ, derived from the surface epithelium.
2. The dentine papilla.
3. The follicular wall, which, with the surrounding tissue, furnishes the cementum.

It would be obviously convenient if we could base a rigid classification of odontomes upon the embryological history of a tooth. This method, which has been the one mainly adopted since its introduction by Broca† in 1869, has not been attended with success.

In the present essay I shall venture to classify odontomes in four groups. The novelty of the method of classification proposed consists in including certain cystic formations and fibrous tumours of the jaws among odontomes. How far this course is justifiable will be seen by the evidence which will be placed before you. The accompanying table represents in a complete form the mode of classification suggested. One of the chief features in this proposed method of arranging these tumours is, that the mode of genesis of the odontome, as well as its structure, is taken into consideration.

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* A paper read before the Odontological Society of Great Britain.

† Traité de Tumeurs. Paris, 1869.

CLASSIFICATION OF ODONTOMES.

A. *Aberrations of the Enamel Organ*—
  1. Epithelial Odontomes.
  2. Calcified Epithelial Odontomes.

B. *Aberrations of the Follicle*—
  1. Follicular Cysts.
  2. Fibrous Odontomes.
  3. Cementomata.

C. *Aberrations of the Papilla*—
  1. Radicular Odontomes—
    a. Dentomata.
    b. Osteo-dentomata.
    c. Cementomata.

D. *Aberrations of the whole tooth-germ*—
  Composite Odontomes.

E. *Anomalous Odontomes.*

A. *Aberrations of the Enamel Organ.*

Epithelial Odontomes.—This name is applied to those tumours which probably have their origin in aberrations of enamel germs, either to teeth which, normally, should go on to full development, or, as Mr. Eve suggests, from epithelial ingrowths around the dental alveoli, some of which may possibly be regarded as the representatives of teeth long since suppressed in the process of evolution.

To Mr. Eve* belongs the credit of drawing attention to the true nature of this kind of odontome under the name of multilocular cystic epithelial tumour. Details of some thirty cases are now known, from which the following characters have been drawn :—

Most of the patients come under observation at the age of twenty years, although the disease may occur at any period from infancy to old age. More commonly the lower jaw is affected, and the molar region is usually, though not exclusively, involved.

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* For Mr. Eve's latest views on this question see the Odontological Society's Transactions, vol. xviii, p. 39, 1885.

In typical specimens the tumour displays on section a congeries of cysts, in size very various, but they rarely exceed an inch in diameter. The cysts are separated by thin, fibrous septa, in some cases by osseous tissue. The cavities are, as a rule, filled with mucoid fluid of a brownish colour. The growing portions of the tumour are of a reddish-brown colour, not unlike that of a myeloid sarcoma.

Histologically, these tumours are composed of branching and anastomosing rods or columns of epithelium, portions of which form alveoli. The stroma is composed of fibrous tissue ; when abundant, embryonic tissue is present. The cells occupying the alveoli vary : the outer layer may be columnar, whilst the central cells degenerate and give rise to a reticulum of stellate cells resembling in structure the *stratum intermedium* of the enamel organ.

The naked eye appearance of these tumours is very characteristic. It is usual to find in many of these cases, as in odontomes generally, absence of one or more of the teeth in the molar region. In the specimen represented, all the teeth in front of the molar were absent. The incisor shown belonged to the right side. The defect in the number of teeth in these cases supports the views also of Falkson and Bryck, who believe that, in some instances at least, these cysts have their origin in persistent portions of epithelium forming the enamel organ of developing teeth.

Mr. Eve's views concerning the origin of these odontomes from germs of teeth, or of suppressed teeth, has received considerable support from the observations of Malassez.*

This investigator has detected spherical, oval, and cylindrical masses of epithelium within the periodontal membrane, and extending from the gum to the apex of the fang of a tooth. The epithelial collections are chiefly distributed below the necks of the teeth, and at the upper part of the root.

It is also satisfactory to find that Mr. Heath † believes these views to be confirmed by clinical experience, and he adopts the term multilocular cystic epithelial tumour, in preference to the older and very unsatisfactory name of cystic sarcoma. From a clinical, pathological, and evolutionary standpoint, I accept these views unreservedly, and feel that this mode of regarding tumours is a very distinct advance upon the usual narrow lines adopted in the study of human pathological anatomy.

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* Journal Soc. de la Biologie, 1884, p. 242.

† "Injuries and Diseases of the Jaws." 1884.

Calcified Epithelial Odontomes.—We must now consider the relation existing between such tumours and the hard odontomes. It has already been mentioned that the septa in these cystic tumours, though usually fibrous, are occasionally composed of bone, and it certainly is easy to perceive that if the mass became in great part ossified we should obtain a hard odontome. On this head, Mr. Charles Tomes made some very interesting remarks in a discussion at the Odontological Society.* He stated that he had observed in at least one specimen of calcified odontome a structure which was such as would be produced by calcification of such tumours. It was for the most part made up of the products of calcification of an infinitely branched enamel organ, there being little trace of dentine or of anything which appeared to have been derived from the calcification of a dentine pulp. A specimen which seems to belong to this form is figured and described by Wedl.†

Before dismissing aberrations of the enamel organ, mention must be made of the following, probably unique, specimen of a single cyst occupying the right side of a jaw, preserved in the Museum of the Royal College of Surgeons. It is thus described by Mr. Eve :—

"It contains no trace of a tooth, and the structure of its wall shows that it is not dentigerous or follicular, in the strict sense of the term, for it is lined by a thick layer of small round-celled epithelium. This may have originated from the expansion of a rudimentary enamel organ owing to the collection of fluid in its interior."

This cyst is of considerable interest, not only for the ætiological interpretation which may with good reason be applied to it, but because it illustrates the destructive effects of a central cystic growth upon the lower jaw. In this case the bony plates forming the angle and ramus of the maxilla are expanded into very thin laminæ ; the condyle, detached from the ramus, is attached to the summit of the cyst by fibrous tissue ; the coronoid process is in a similar condition, and the temporal muscle forms an exceedingly thin investment to the outer part of the cyst wall.

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*Odontological Society's Transactions, vol. xviii, p. 62.

† Heider and Wedl. Atlas zur Pathologie der Zähne, 1870.

B. *Aberrations of the Follicle.*

1. *Follicular Odontomes.*—The term follicular is here adopted in preference to the older adjective dentigerous, because the latter term has often been applied loosely to any cyst which bears teeth. The result of this inexactness has been to induce confusion, because all cysts which bear teeth are not dentigerous, even when they occur in connection with the jaws; for those curious cysts termed dermoid, and the heterogenous masses called parasitic fœtuses, often contain teeth.

The true dentigerous cyst can only occur in connection with the jaws, and is to be regarded as a distension of the follicle in which the developing tooth is enclosed. If we can agree to apply the term *follicular* to such cysts, misapplication of the word is less likely to ensue.

An extended study of these cysts has led me to some interesting conclusions, for I think it will be possible to show that certain forms of odontomes of the hard variety arise from aberrations of this particular element of a tooth. An endeavour will also be made to put before you a series of forms from one extreme to the other.

The characters of follicular cysts, as is well known, are the following:—

They arise in relation with teeth which have remained within the jaws—retained teeth; they are connected most commonly with those of the permanent set, but may affect also a temporary tooth; this, however, is rare. They are most frequently connected with the molars, and occur in the upper and lower jaws. In the latter situation they expand the bone and produce extensive deformity, leading the surgeon to believe that he has to deal with a solid tumour. In the upper jaw the cysts invades the antrum. In the simplest variety the cyst wall is composed of fibrous tissue, and the cavity is filled with glairy viscid fluid. Projecting into the cyst into most cases is the fang of an undeveloped tooth; sometimes, however, the tooth lies in the cavity of the cyst, and in rare instances the crown of the tooth is well formed, but the fang is imperfect. A specimen exhibited represented a follicular cyst removed from a youth. It contained a bicuspid tooth deficient only in the lower part of the fang. This truncated appearance of the fang of a tooth is not uncommon in follicular cysts. Not infrequently the tooth is inverted.

It is a fact of some importance in connection with the diagnosis of these cysts that they are connected with unerupted teeth, and the surgeon should always carefully inquire into the completeness, or otherwise, of the dental series when investigating doubtful tumours of the jaws.

Follicular cysts are liable to secondary changes ; one of the most frequent is calcification of the cyst wall. All cysts of this nature which I have been able to examine, presented this character. The amount of calcareous material varies. In some instances the wall is a shell of bone.

The Museum of the Odontological Society, and that of St. Bartholomew's Hospital, each contains a jaw of a lamb with a follicular cyst of some size. In each case the walls are bony and of some thickness ; the bone is of the loose open texture characteristic of the alveolar borders of the jaws.

The best explanation yet offered concerning the ætiology of follicular cysts is that by Tomes, viz., that they arise from excessive formation, around a retained tooth, that is, between the enamel and the wall of the follicle, of a fluid which is normally found after the complete development of the enamel.

A follicular cyst may suppurate. This event seems to occur most frequently in the lower mammals. The following is a good example :—

A prehensile-tailed porcupine died from the effects of a large abscess on each side of the mouth. These had burst externally, giving rise to deep sinuses. A probe passed into each gave evidence of necrosed bone, and at first sight the case seemed to be one of alveolar abscess consequent upon diseased teeth, a condition of things exceedingly common in these mammals. On examining the mouth I failed to find the lower incisors ; this was very singular, because the bone at the symphysis was quite normal. On tracing one of the sinuses by dissection, it was found to lead into the mental foramen, and thence into a cavity occupying the body of the inferior maxilla. The cavity was filled with pus, but the abscess was limited by fibrous walls of considerable thickness, Feeling convinced that this was something more than a simple abscess, the bony walls were dissected and the sac removed and examined in detail.

Projecting into its posterior aspect are portions of the fangs of two undeveloped teeth. This is sufficient evidence to show that we have to deal with a follicular cyst—that is, the walls of this sac are constituted by the greatly distended follicle of one of the teeth, probably the incisor. From some cause or other suppuration had occurred, and led to the necrosis of the maxilla and absorption of the fangs of the molar teeth; a remnant of one may be seen projecting into the cyst. The inferior dental nerve, as a mere thread, was closely embedded in the walls of the jaw on the outer side of the sac. The opposite maxilla was affected in a similar manner.

It is not my intention to discuss in an elaborate manner follicular cysts, but merely to bring under notice those facts which will help me to show that these cysts must be classed with odontomes. The cases to be considered in the next section serve to bridge the interval between the cystic odontomes and the next closely related form, viz., the cementomata.

To be continued.

TWO CASES OF ŒSOPHAGOTOMY FOR THE REMOVAL OF ARTIFICIAL SETS OF TEETH.

PERFORMED BY DR. BERNS, OF AMSTERDAM.

KOENIG (Deutsche Chirurgie. Edited by Billroth and Lücke), gives an account of 33 cases of œsophagotomy for the removal of foreign bodies, in 3 of which the cause was an artificial set of teeth. In Virchow and Hirsch's Jahrbücher, there are nine further cases mentioned between 1879 and 1884. In four of these cases, the offending cause was a piece of bone, in the five others respectively, a piece of wood, a fish bone, a stone, a large back tooth of a sheep, and a small set of artificial teeth. Of these nine patients, four died. It would be wrong to conclude therefrom that œsophagotomy is a most dangerous operation and almost unjustifiable, for of the previously mentioned thirty three, only six died. If we add the two series together, we find ten deaths out of 42 cases or a mortality of 23.8 per cent. Further examination makes it clear to us that the unfavorable results of this operation cannot be altogether accounted for by the length of time, during which a foreign body remains in the œsophagus. Cases are recorded in which the operation was followed by a most successful result though only performed from the eighth to the tenth day after the accident. W. Evans's case (Virchow and Hirsch's Jaerbuch for 1879,) that of a young woman, the artificial teeth were retained impacted in the œsophagus for two years, and at the end of that time they were removed through the mouth. It is not surprising that the patient, though getting off with her life, should have been much troubled with a stricture of the œsophagus as well as by a dilatation immediately above it. It is evident that the sharp angular or pointed process of the swallowed object; or, if it is unusally large, the ensuing excessive dilatation of the walls of the œsophagus coupled with the long incarceration does lead to ulcerative processes and to perforations, and that these are the principal causes of the unfavourable results, if not also to a greater degree the futile and oft too energetic attempts at extraction. If the attempt to extract the object is carefully made, and if it is not soon successful, it will be well to give it up altogether. If the object swallowed is large and points and sharp edges can be either felt or suspected, I believe it will be prudent to proceed at once to remove it by œsophagotomy. In both the cases, in which I had occasion to operate, I look upon it as most lucky for the patient that no, or at least but a very careful attempt had been made at extraction.

I will now give a short account of my cases.

I. S. Postmaster of S——, aged 35, had worn for some long time an artificial upper set. During the night of May 12th, 1885, the patient awoke with violent pains in his throat on swallowing, and at once missed his artificial teeth. His medical attendant, Dr. Ensing, sent him to me without loss of time for operative treatment. The patient, though not very powerfully built, had a healthy appearance. His features denoted a feeling of great anxiety. Eyes injected, face rather pale, voice hoarse. A preliminary examination with the finger, the œsophageal sound, and the laryngoscope revealed nothing. The sound passed close down to the stomach without meeting any obstruction. We telegraphed to the patient's residence, in order to ascertain whether he might not possibly have coughed out his teeth, as he distinctly remembered having had a violent fit of coughing. At the second examination two hours later, considerable tenderness was found to the left of the cricoid cartilage, pain was complained of between the shoulder blades, and now the sound came down upon a foreign body lodged at about the level of the cricoid, and it was evident, on careful manipulation, that we were dealing with a hard but non-metallic body. The patient having been chloroformed, the head was bent over somewhat to the right and an incision about 7 cm long was made midway between the trachea and sterno-mastoid muscle beginning a little above the cricoid. After dividing the skin, platysma myoides and the fascia, the thyroid gland was drawn to the right with a blunt hook, the muscle was thrust to the left, and a third hook placed in the upper angle of the wound. Six small vessels required tying ; the finger could not feel the impacted body ; after fixing the œsophagus with a sharp hook and incising its walls, the corpus delicti was withdrawn by means of forceps after somewhat violent attempts, as the contours of the artificial set were not sufficiently well known. A small portion of the india-rubber plate was now found to be missing, and was sought for without any result in the lower part of the œsophagus. The patient on awaking informed us that this piece was broken off and lost some time ago. No stitches were inserted in the wound in the œsophagus. The wound was dusted over lightly with iodoform and four sutures inserted together with a strip of gauze in the lower angle. After the dressing was applied, the œsophageal tube was passed and the patient fed. When once in bed he felt relieved, his voice was less hoarse, and he remained perfectly quiet. On the following day as the sound did not slip in easily, the patient was allowed to drink some milk. For the first few days a few drops of milk passed through the wound, which was washed out with sublimate lotion after every time he took food. The temperature was raised a little above the normal for a few days only. On the 21st May, all that was left was a small granulating wound and the patient began to take solid food. He left the hospital quite cured a few days afterwards.

The piece consisted of the two upper incisors on a wide plate of vulcanised india rubber. A large plate covered the hard palate. At its right end was a broad hook which surrounded the first molar and almost filled the hollow of the missing second molar. A large portion of the left wing of the plate was broken off. Both ends were very sharp. The piece measured 4.1 cm. from right to left, and 3 cm. from the base of the incisors to the border of the palatal portion. It lay with its long axis across the œsophagus which it stretched in such a way that it could turn on its two ends as on a pivot which explains the fact of the œsophageal tube sliding past it on one occasion and hitting it the second time.

II. Fraulein M.—–, aged 19, in the Deaconesses Institute at Haarlem, had the misfortune to swallow her false set of teeth during an hystero-epileptic fit at five o'clock in the morning on May 21st, 1886 : the piece consisted in this case also of teeth for the upper jaw. Dr. Posthuma could make out that a hard body was impacted in the œsophagus on a level with the cricoid cartilage, and after careful but fruitless efforts at extraction, he considered the operation called for, and summoned me in consultation. At noon the same day I found the patient, a healthy looking girl, in a very highly nervous condition. She was easily put under chloroform. The operation was not so simple as in the former case, for the extraction was attended with great difficulty owing to the very sharp points and the far greater dimensions than in the former case. The edges of the incision in the œsophagus were rather bruised owing to this fact. This is also the reason why it took a much longer period to obtain a perfect cure than in the former case, though the final result was satisfactory. Though in this case also, the lower portion of the wound was left open, not only did the fluids portion of the meals escape for a longer time and in larger quantities, but they were also retained in a recess which formed to the right and left of the œsophagus, which gave rise to threatenings of an abscess burrowing towards the mediastinum. For a considerable time after the patient had eaten, particles of food mixed with pus could still be made to come out this recess by pressing on the right side. The quantity gradually decreased until at last but very little pus was secreted, but this went on containing particles of food for a long time afterwards. At last a silk suture also came away and three months after the operation the patient was dismissed cured.

In this instance also we had to deal with a vulcanised india rubber piece. It consisted of the two upper incisors and the right lateral. The set held on to the first right molar by a broad hook, while on the left it surrounded the two first molars with sharp hooks. The extreme length from right to left was 4.2 cm. from the middle to the base of the incisors it measured a good 3 cm. the transverse measurement being 4.4 cm.

DISCUSSION UPON THE USES AND DANGERS OF COCAINE.*

Mr. Stocken, the mover of the adjournment, commenced the discussion, saying he had only three cases of which he proposed to tender a report. His experience of cocaine had not been to his satisfaction. The first case was that of a medical man, and as the notes were written by the patient himself they would possess a special interest.

A painful exostosed bicuspid was extracted, 1 grain of cocaine, 5 minims of a 10 per cent solution having been injected into the buccal surface and a like quantity into the lingual surface of the gum. After waiting about two minutes the tooth was removed with a complete absence of pain, but about one minute afterwards nausea and syncope supervened, attended with a sense of compression over the brows ; there was no impairment of consciousness, but there was of the power of articulation, which assumed a kind of panting character of expression when the patient aimed at explaining that the feelings were gradually lessening in intensity. Dyspepsia and some griping due to a distension of the transverse colon were present, and, all the time the face and head were deluged with perspiration. The pulse was small and feeble, the eyes appeared sunken, and the complexion was cadaveric. Numbness extended for about an inch from the point of injection of the cocaine, and involved half the surface of the hard palate and the edge of the tongue on the affected side.

The urgent symptoms passed away in about a quarter of an hour, and the numbness in about two hours. It is possible the stomach symptoms, in this case, might have been aggravated by preliminary treatment in the form of four single-grain doses of sulphide of calcium, which had already set up some dyspepsia.

On a former occasion he had submitted to similar cocaine treatment without any unpleasant effects. In that instance he experienced only the numbness lasting the usual length of time, and a slight evanescent giddiness, which, as he did not refer to it, was not observed.

Hence, unless the sulphide of calcium be regarded as a perturbing factor, the influence of cocaine, of the same source and strength, may be inferred to exercise different effects on the same person at different times, and thus exhibits an additional element of danger to be watched and guarded against.

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*Odontological Society of Great Britain, November, 1887.

The second case Mr. Stocken desired to bring before their notice was that of a gentleman about forty-five years of age. He was consulted by the patient with reference to the removal of his second right lower molar. At his particular request Mr. Stocken subcutaneously injected cocaine, using 1 grain dissolved in 10 minims of water. Of this solution he injected 5 minims on the buccal, and 5 minims on the lingual surface of the gum. He placed the end of a napkin in the sulcus, so as to prevent the escape of any of the solution into the mouth; almost immediately the patient became very pale, giddy, and faint, and the pulse, after a transient rise, fell rapidly to a point at which it was scarcely at all perceptible; then the respiration became laboured and irregular, with profuse cold perspiration, slight nausea, uneasiness over the region of the heart and abdomen, with extreme coldness and numbness of the extremities.

Another feature of the case, of which the patient complained, was great fulness of the tongue and inability to draw it backward; thus, speech was difficult, the voice thick, and deglutition almost impossible; thus in speaking, his sentences were broken up into one or two words at a time.

His mind was perfectly clear, but he seemed to be extremely anxious to express that he felt there was no blame attached to Mr. Stocken, and also his wishes in certain eventualities, showing that his feelings were such that he thought it possible he might not recover.

In about two hours he had almost regained his normal condition, but for a further three or four hours he (to use his own expression) felt like one who had been half-drowned; later in the day all these exceptional feelings disappeared, and subsequently no ill effects were experienced.

The means employed to restore this patient were the placing him in a recumbent position, striking the temples with a wet napkin, the administration of nitrite of amyl (by inhalation), nitro-glycerine tablets, ammonia, and brandy. The nitroglycerine tablets were put into his month, but he could not swallow them. The recovery was gradual, and at the end of the two hours, he was able to walk to his carriage, but with an uncertain gait. A local medical man was sent for, at the request of the patient, Sir Alfred Garrod, his usual medical attendant, was called to his aid ; but on his arrival the patient had almost recovered himself. Sir Alfred Garrod stated that " for fifteen years or more this patient had had his nervous system very easily impressed, unusually so, and at one time had to some extent lost power in the lower extremities. And this he had never fully recovered. His temperament might therefore at present be termed very nervous : his condition of heart, omitting the condition of the nervous system, had been fairly good." Sir Alfred Garrod closed his remarks by saying, " I cannot help thinking that injection of cocaine into the system at large, which must result from puncturing of the gums, is not a desirable operation when only the local effect of cocaine is required."

Dr. Squibb, who has given much attention to the manufacture of cocaine hydrochlorate, says, " In commercial samples he finds rarely less than 1 per cent. of a light brown, sticky, odourless, bitter, neutral substance, and producing the cocaine impression upon the tongue, probably because it still contains cocaine : but as all reasonable means have failed to entirely free the salt from this substance, he infers that it is a continuous product at the expense of the alkaloid, due to manipulation."

It has been asserted by some gentlemen who have used cocaine they have had no untoward results ; others, whose opinion and skill are equally entitled to consideration, report very different results. Such was his experience ; it seemed to him there must be some occult cause for this ; was it possible it might rest with the alkaloids used ? The experiments of Dr. Squibb seemed rather to point that way—at all events it was a point worthy of investigation.

Notes supplied by Dr. Maurice Davis, *communicated by* Mr. James Stocken.

Our acquaintance with this alkaloid being but recent, our knowledge of its influence upon the system is at present very imperfect.

The Russian Professor Kolomin, in his search into the literature of the subject, seems to have acquired a very contemptuous opinion of its power. He gleaned tho impression that his choice of a dose ranged between 6 and 60 grains. His colleague, the Professor of Pharmacology, advised that 2 grains should be regarded as a maximum dose ; but as the

French Professor Dieulafoy had employed a dose of 48 grains with impunity he considered himself acting within the limits of safety in prescribing half that quantity ; accordingly he injected into the ulcerated rectum four doses of 6 grains each, and killed his patient in forty-five minutes after the last injection. The symptoms reported are, that the face and hands became livid, the pulse weak, and the respiration laboured. Restoratives were applied, such as faradisation, subcutaneous injections of ether, inhalation of oxygen, ammonia, stimulant enemata, artificial respiration, and even tracheotomy, but all in vain.

Mr. Bowes, of Sydney, announces in the *British Medical Journal* that he used 3⅜ grains by injection and instillation. An eyeball was extracted without pain, but in a short time after the operation, thirty minutes from the time of the first instillation, the patient "turned very faint, her face became blanched, and her lips slightly cyanosed ; she felt very sick, her pulse was rapid and feeble, but she soon got better again." In about two-and-a-half hours the symptoms recurred, she was seized with faintness accompanied with cold extremities and rapid pulse : she, however, ultimately recovered.

Mr. Mason injected into the gum 1 grain, and found in one hundred cases that although some complained of restless nights, only two suffered from nausea.

Mr. Franklin injected single-grain doses for minor operations, at the Station Hospital at Shorncliffe.

1. In one case there was no effect either in annulling pain or in exciting unpleasant results.

2. In another case pain was abolished without subsequent annoyance.

3. And in a third case, with the same dose, and the instillation of fifteen additional minims of a 10 per cent. solution, there was loss of sensibility during the operation ; but in one or two minutes afterwards the patient became pallid and cold, with intermittent pulse ; in three hours he vomited and felt "very bad" during the day. He was well on the day after. Although numerous cases have been recorded in which single grain doses, administered in the most active mode subcutaneous injection, have produced giddiness and fainting, lasting from a few minutes to a few hours, yet half-grain doses seem to possess much influence for good, without, as it seems so far, being attended with any of the dangerous or alarming symptoms so frequently placed on record ; one case

of old and obstinate facial neuralgia having been not only relieved, but cured, by the occasional injection of half a grain of the alkaloid.

Wolfler found that an injection of about 3 grains of a 5 per cent solution produced within two or three minutes an anæsthetic condition lasting for twenty to twenty-five minutes. Needles introduced into the skin to a depth of 3 centimetres were not felt. Though not meeting himself with any accident, he advises, nevertheless, caution in the use of cocaine, as Heyman had recently observed a severe intoxication after its application. Cocaine had been applied by the brush to the larynx of a boy ten years old previous to the removal of papillomata, whereupon a state of apathy set in which lasted for five hours. (Dr. Gaye Russell, *Edin. Journ.*, November, p. 455.)

Dr. Ramsden Wood, of Sydney (Stanmore), reports these symptoms after an injection of 4 minims of a 20 per cent solution of cocaine :—" Within five minutes he became restless and inclined to vomit ; he then began to feel a sensation of pins and needles in the left hand and arm, which rapidly extended to the right side. This was speedily followed by contraction and rigidity of the fingers, arms, and legs ; there was also a tendency to opisthotonos. His pulse became exceedingly rapid and feeble, his face livid, and the muscles of his mouth and cheeks strongly contracted. His respirations were short and convulsive, his feet and hands very shortly became cold, and a profuse perspiration broke out on his head and face. I first gave him half a tumbler of brandy, followed at short intervals by drachm doses of Sp: Ammon: Arom:, and applied strong mustard over the cardiac region, and used friction to the upper and lower extremities ; at the same time I let him inhale a few drops of chloroform to try to check the spasmodic contractions. After continuing these remedies for nearly an hour the pulse began to improve, the colour to return to the face, and the rigidity of the muscles lessened, but returned again immediately I stopped the friction. At the end of two hours he improved more rapidly, but felt somewhat drowsy, and it was not until four or five hours that all the symptoms had subsided. On questioning him afterwards regarding his sensations he told me that, although he was unable to speak coherently, he knew all that was passing, and it was not until he felt the abdominal muscles becoming rigid that he felt anxious, for then he thought he was dying, and a sensation of suffocation came over him." (*Australian Med. Gaz.*, August, p, 276.)

It will be seen that this dose was only .8 grain, slightly more than ¾ grain of cocaine.

(*To be Continued*).

ON EMPYEMA OF THE ANTRUM.

By B. Fränkel.

(*Concluded from page* 1006)

Cocaine affords us a very easy means of seeing the middle nasal meatus. I am in the habit of moistening by means of a syringe the affected parts with a 15 per cent. solution of cocaine, and of waiting for the reduction of the swelling before commencing, in all those cases in which the middle nasal meatus is not sufficiently wide and is narrowed by the shape of the middle turbinated bone or by its swollen condition, or when the lower bone restricts the field of vision to too great an extent.

All pus which flows from the hiatus into the meatus does not necessarily come from the antrum. The frontal sinus and the anterior ethmoidal cells also pour their contents into this furrow. It is, however, very difficult indeed to tell whether the pus which is poured into the nasal cavity, comes from the latter cavities or from the antrum, even without taking into account the fact that, owing to the far greater frequency of empyema of the antrum, the probabilities are that the suppurative process has its seat in the antrum. In order to establish a differential diagnosis, as stated above, we begin by painting over the mucous membrane with cocaine and clearing out the middle nasal meatus, and then make the patient place himself in such a position that the vertex is lowermost and the sound side is held lower than the affected one. In this position the secretions from the antrum flow into the middle nasal meatus, whereas those in the frontal and ethmoidal cavities are retained. If now, after making him resume the erect position, we examine the patient and find pus in the middle nasal meatus we may assume that in all probability the pus comes from the antrum. If we repeat the experiment with the same result, the probability that we are dealing with an empyema approaches to a certainty. I am in the habit of repeating this simple process several times, in all doubtful cases and usually succeed in coming to positive diagnosis ; at the very least these signs enable me to assert is that there is pus in the antrum, without, however, wishing to deny that in very exceptional cases both the frontal and ethmoidal sinuses may be affected at the same time.

This method of confirming the diagnosis is so very easy to carry out that it ought to be employed in every case. I do not differ very materially from Ziem in looking upon this as a necessity. He believes that these cavities especially the antrum, should be submitted to some direct form of treatment. 1st, when a chronic discharge from the nasal mucous membrane has been treated for some long time without any result. 2nd. When the nasal mucous membrane as far as can be seen shows no sign of disease, and yet there is a flow of pus at periodical intervals or whenever air is forced into the nose. Instead of this uncertain method of diagnosis by exclusion, I require *the positive discovery of the outflow of secretions through the hiatus semilunaris and the increase of it when the head is hanging low.* If you do not grudge the short time which is required to obtain this result you will always arrive at a positive diagnosis. In this case the boring into the antrum will cease to have only the value of an exploratory incision and will only be performed, when there is no secretion in the antrum, in those cases which absolutely require it.

In comparison with the certainty which the immediate discovery of secretions flowing out gives us in regard to the knowledge of the disease, the other signs have only a very much smaller value as regards diagnosis, in many cases they only serve as indications to lead us the right way. These signs, however, acquire an altogether different importance when we look at them from the patient's point of view. For they cause him *a great increase of suffering and often help to embitter his life.* The symptoms do not afford us much information about the actual seat of the disease and often occur in such a way as to give the appearance of some other affection. On this account they are deserving of further consideration.

The outflow of pus from the nose, when it originates in the antrum, is seldom the cause of the patient's visit to the surgeon. If the quantity is small, the laity often look upon it as a normal feature of this organ and in many cases even as a sign of health. When the flow is very large so that the patient is obliged to apply to the surgeon on account of his running catarrh, in most cases there are other complicating affections, and these are the causes of the empyema. These are the cases in which the surgeon first thinks of the adjoining cavities when the discharge has lasted for an unusually long time and has afforded an excessive resistence to the usual remedies.

The matter, however, assumes quite a different aspect when the discharge is fœtid. The nasty *smell* which forms in the antrum makes its escape through the olfactory passage, and is thus detected by the patient even sooner than by any one else. As the empyema is usually confined to one side these patients complain of a disagreeable smell which they detect at times on one side of the nose, and in a much more intensive nature than what occurs with patients with ozœna when they happen to detect the nasty smell from their nose. Complaints of this kind from patients ought to draw our attention to the antrum as soon as anterior rhinoscopy fails to give us an immediate certainty as to the spot from which the bad smell proceeds. If the smell is really developed in the antrum it often happens that at first nothing is seen in the nose. Though I have heard of cases in which disturbances of smell have been the first symptoms of a commencing catarrh, but they have been very rare and it would hardly appear likely that these patients should always locate these subjective olfactory phenomena on one side of the nose only. If patients of this class complain of detecting a smell on one side of their nose, we must carefully examine, even if we do not detect anything ourselves, by means of the air douche and by placing the patient's head in a proper position, whether the antrum is diseased which will, most likely, be found to be the case.

Empyema in the large majority of cases gives rise to *pain*. This is seldom referred to the teeth unless they be diseased. A small number of these patients complain of spontaneous pain in the region of the cheek; this must be looked upon as a "classical symptom." If the question be asked, many will answer that at times they have felt a sensation of drawing or tension in the cheek. By far the majority, however, complain of very violent pains in the *frontal region*, over the eye, behind the eye, or about the root of the nose on the affected side. In some cases these pains are only felt of a morning on waking, in others, after certain bodily movements, for instance, after stooping, and they are seldom present all the day through. Some patients have declared of their own accord, that they had noticed that the pains left them as soon as the pus began to run into the nose. I believe that these pains arise in the same way as those exactly similar in their nature, which are occasionally complained of after the use of the air douche, and are due to the filling of the antra. That these are really dependent on the empyema is seen after the boring into the sinus. For the pains decrease as the cavity takes longer to fill. They begin again during the treatment as soon as both openings get blocked and occasionally also in quite a temporary way during the washing out of the alveolus if the opening gets obstructed by a drop of pus and the level of the fluid in the antrum.

For the general practitioner also empyema acquires at times a certain importance owing to the nervous disturbance that these pains bring about, though it must be acknowledged not in every case. These pains are of such a nature that they might easily be mistaken *for migraine or supraorbital neuralgia in the absence of diagnosis* of empyema of the antrum. It would appear of some importance therefore to ascertain in all such cases *whether there be an empyema or not.**

In addition to the pain many patients also complain of *other forms of nervous troubles.* Several have stated that they had feelings of vertigo as if they were unsteady, and fancied themselves about to fall. Others complained of undefined pressure in the head, of dulness of mind and disinclination for work. Some of these patients were looked upon by their medical attendants as hysterical or hypochondriac, owing to their continual complaints for which no cause could be discovered. Some few looked pale and had become ill-nourished, as was seen when they recovered.

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* There are cases in which these pains are felt without any pus flowing into the nose. That must evidently occur when the ostium maxillare is blocked up. At the onset in such cases there is no change of shape of the cavity. In a case in which these pains were felt, and pointed to the antrum and I did not succeed in passing a sound into the ostium so as to be certain that it was patent, I should consider an exploratory punction called for and should not hesitate to make one from the middle nasal meatus through the membranous partition.

Empyema of the antrum affords us, therefore, not only all the symptoms of a local affection in one of the most remote cavities of the body, but beyond that also symptoms of a nature to affect the general health most injuriously. It is all the more consolation that we can cure the illness in its earliest stage.

For a long time I endeavoured to cure empyema without an operation. For this purpose I began by removing the cause. If there were any diseased teeth I had them removed or filled, taking care that the periosteum should not be wounded. If there was a discharge from the nose I tried to subdue it by suitable treatment. I endeavoured to promote the flow through the hiatus by removing any projecting portion of the middle spongy bone by means of the galvanic cautery, &c., For the empyema itself I employed injections which I endeavoured to force into the antrum, through the natural opening. I have not been so successful as others, as Störk, for instance, who strongly recommended the process at the last Meeting of Natural Sciences. Notwithstanding continuous treatment in some instances for over a year, though I occasionally improved the condition, as regards the pain, I never obtained a cure. I quite agree with Cloquet, who says: "It has been believed that it was possible, when the pus flowed in part into the nose through the natural opening of the antrum, to effect a cure by placing the head in a suitable position, by general methods intended to meet the probable or ascertained cause of the disease, and to cure it by cleansing injections, especially when the walls are neither expanded nor affected with caries and all the teeth are sound. But experience has set aside this method, which was almost as soon forgotten as proposed, and for which, in 1765, Jourdain exhibited before the Academy of Medicine, an instrument invented by him. This instrument consisted of a small syringe which brought the fluid to be injected into the natural opening into the antrum by means of a crooked tube passed through the nose into the middle meatus. Allouel claimed this discovery for his father, who had made it 1737 and used it for the first time in 1739; but who had never proposed it to experienced surgeons, because it was often impossible to use, always difficult to carry out, and invariably useless. It is now fully recognised that it is impossible to cure the abscesses of which we are speaking, without making an artificial opening as an outlet through which the pus may flow.* In fact, I have obtained incomparably better results *i.e.*, cures in all cases after four to eight weeks' treatment since I have attacked the empyema by a radical treatment of the teeth and mucous membrane of the nose.

When we come to choose between the different processes for making an opening into the antrum, we find that our hands are not always free. If there are fistulæ we must follow these. In the first case in which I opened the antrum, owing to the necessity of removing a dead tooth, I made up my mind to perforate it through the socket of this tooth. I used cocaine anæsthesia for the purpose, and in the following way. To begin with a preparatory preliminary painting was made of the tooth both internally and externally. Two minutes after I injected into the mucous membrane of the gum one and a half syringeful of a fifteen per cent. solution on the inner and outer sides of the tooth. Five minutes after a process of this kind, the tooth can be removed quite painlessly. The anæsthesia also lasts a sufficient time for the antrum to be opened without any pain being felt, by means of trocar or a gouge, both of which instruments can be used with the hand and by slight taps of a hammer. The operation in every case proved quick, easy, and very simple. I have never had to have recourse to a gimlet. In some cases, however, the absorption of the alveolar process may not have occurred to the normal extent, and we may find that there is a rather thickish plate of bone between the socket of the tooth and the cavity of the antrum. In such cases it is well to have a gimlet at hand or to abstain altogether from any attempt at opening the antrum from the alveolus.

The subsequent treatment consists in the injection at least once a day of a solution of carbolic acid, borax, boric acid or such like by means of a tube and an irrigator. Ziem himself makes use of Meyer's douche. The solution runs out through the nose and brings with it considerable quantity of pus which, however, decreases from day to day.* The patients soon learn to introduce the tube for themselves and to carry out the injection without any superintendence.

I have never tried to close the artificial opening, because I am of opinion that it is quite impossible to do so effectually, by which I mean to make it impossible for bacteria. I believe that *the drawbacks to* this method of opening the antrum through the alveolus are owing to the communication which then occurs between the oral and antral cavities. The micro-organisms from the mouth, saliva, particles of food, etc., find their way into the antrum, which, of course, is by nature only intended to contain air. This is the reason why such a prolonged treatment is required when this method of opening the antrum is had recourse to.

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* I have given this passage textually as an example of the fund of information to be derived by the study of the ancients. How often may not Allouel's syringe have been rediscovered after Jourdain's time?

* If the tube introduced into the antrum is made to communicate with a manometer filled with ether, the respiratory changes of pressure are easily seen.

On this account in my last case after having had the dead and hollow teeth (both bicuspids) successfully filled I proceeded to open the antrum through the nose. According to Adelmann's learned researches into the diseases of the antrum, Gooch, an Englishman, was the first to make an opening into the antrum through the wall of the nose in the case of a patient who had lost all his molars.* Zuckerhandl advises it to be done through the middle meatus, J. Mikulicz through the lower. I have followed Mikulicz' method because the opening which he recommends is placed in a relatively lower position. It must be owned, however, that when the opening is made through the nose it is not even then possible to prevent a more or less deep portion of the antrum remaining from which in the erect position the secretions are unable to escape. This is a drawback of this method compared with the opening through the alveolus. The advantages, however, exceed the disadvantages, for in this way the antrum is altogether closed against the mouth. The opening of the antrum through the nose also prevents any possibility of the antrum becoming filled with secretion and the unpleasant consequences of the damming up of the pus in the antrum from being further perceptible.

I also made use of Mikulicz' instrument. After the mucous membrane has been cocainised, the instrument is passed easily and without wounding the inferior turbinated bone, and it is then possible, if it is pushed far back enough, by means of slight up and down movements to make a sufficiently wide opening into the thin osseous wall which separates the neighbouring cavities. As stated above, I have used this method once and am very well satisfied with it. The opening thus made is sufficiently large to allow of a view of the inside being obtained with Nitze's instrument.

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* J. Von Bierkowski (Explanatory Tables of the Anatomo surgical-illustrations, Berlin, 1827) says : "The opening of the antrum through the nose may at the outside be called for once in every four cases, when there is some fluid of extravasation or some diseased process in the antrum ; the opening in this situation is, it must be owned, difficult to make. The patient sits on a stool, an assistant stands behind him and holds his head firmly fixed and thrown as far backwards as possible. The operator takes a crooked trochar (Plurant's,) passes it like a polypus forceps through the anterior nares on the affected side, turns the point of the instrument against the wall of the antrum, and pierces it as may be required in one or more places."

The subsequent treatment consists in the washing out of the cavity with the above mentioned solutions. In the course of two days my patient had learned to pass the crooked tube through the bony opening, and three weeks after he was discharged cured. This method gave me such a satisfactory result that I should not fail to use it again in a suitable case.

As to the choice between the several modes of making the opening, there appears to me to be little doubt that in suitable cases a satisfactory cure can be obtained. The boring of the antrum is an operation by which the patient is relieved of serious and lasting trouble, and it deserves to be employed far oftener than was the case until quite recently.

[Between the dates of the meeting and of the correction of the proofs of my paper I have performed the operation on three further cases after Mikulicz' method and I am exceedingly pleased with the result].

To Prevent Rubber Crawling.—Soften the first pieces for packing, for a few seconds, on one side in chloroform and then quickly press soft side down to place with moistened fingers or otherwise, and it will stick. In packing the other pieces press so as not to stretch them. It is sometimes handy to hold a point of rubber in place by attaching a little string of rubber to it, extending the string into the surplus gutter and there fastening it with a little tack.

Mr. Bullin's Tribute to America.—All the American journals are cock-a-hoop over the "tribute" paid in the now well talked of Chester address ; one would imagine such jubilation followed upon restitution of some long contested and oft refused right, instead of a mere passing notice of our indebtedness to our cousins, a debt which has ever been cheerfully conceded, but not quite in the expansive manner sometimes indulged in by after-dinner speakers.

British Journal of Dental Science,

LONDON, DECEMBER 15th, 1887.

THE DANGERS OF SWALLOWING ARTIFICIAL DENTURES.

Few dentists pass through their career without being brought more or less closely in relation with one of those melancholy cases of death or serious injury through slipping of artificial teeth from their place and their entrance into the air passages or œsophagus. We have from time to time published cases of people who have either suffered from having dentures impacted either in the air passages or œsophagus and we feel that some broad principles of treatment in such cases may not be out of place. Indeed, dental surgeons may not unfrequently be called upon to advise the patient or consult with the medical practitioner attending the case, and his special knowledge would then prove of considerable value.

Dealing with foreign bodies impacted in the œsophagus it may be remarked that impaction usually occurs at one of three situations, the narrowing which exists close to the cricoid cartilage; the constriction where the œsophagus deviates to the right as it passes beneath the aorta, and lastly at the site of a third narrowing where the diaphagmatic aperture is traversed. The nature of the foreign body which is swallowed determines very largely the situation of its impaction as well as the amount of fixation it shows.

Thus, small dentures when they have hooks affixed are liable to travel some way down the tube, and frequently are not at all firmly impacted until efforts at their removal, or more commonly, retching or vomiting on the part of the patient forces the sharp points into the soft mucous membrane of the gullet. Large pieces seldom penetrate past the first constriction, but by their bulk irritate the muscular tissue of the œsophagus and exciting spasm become firmly grasped by its walls. Leaving out of the question such small plates as are without hooks and single teeth which presumably would find their way directly into the stomach, we will next consider what treatment would be appropriately followed in dealing with foreign bodies impacted at one or other of the three sites above named. When the plate is high up it is accessible by the finger, and long œsophageal forceps will be readily made to grasp it, and, if hand led cautiously, can be used to dislodge and remove. Even when out of sight, long curved forceps will often enable the surgeon to strike and even seize the impacted body. When, however, we are compelled to work in the dark, the rule is to use the minimum of force to avoid the possibility of damaging the œsophagus by tearing, scratching, etc. Failing to dislodge by means of œsophageal forceps, probangs should be tried. One or other form is carefully passed so that the end is well beyond the obstruction, it is then withdrawn entangling in its progress outward the impacted mass. Should one or two cautious attempts with the probang fail in moving the obstruction although gripping it, it is expedient to desist from further efforts of this kind. It then becomes a question whether it may not be possible by cautious manipulation to dislodge the foreign body downwards, causing it to traverse the remainder of the gullet and enter the stomach. Moderate sized plates may pass through the whole length of the alimentary tract without giving rise to any untoward occurrence. If the impacted substance yields to such efforts and enters the stomach, and if it is known to be small, the patient is advised to partake freely of soft pultaceous food with a view of encasing the swallowed substance and so enabling it to pass downwards along the gastro-intestinal tract. Under no circumstances whatever is it advisable to allow the patient to take emetics or purgatives. The former medicaments are liable to produce the most frightful laceration of the œsophageal walls by forcing the plate along them, or even may cause the rupture of the tube, an accident likely to be followed by death. Purgatives, by increasing peristalsis and irritating the mucous membrane of the intestinal walls, are pretty sure to lead to equally untoward results, by laceration or even rupture of the gut. When the plate swallowed is so large as to preclude all hope of its escaping harmlessly along the intestinal tract, one of two courses is left to the surgeon, removal of the impacted body by the operation of œsophagotomy, or if the stomach has received the intruding substance, gastrostomy. Into the details of such procedure we cannot with propriety enter, they lie wholly outside the field of the surgeon-dentists' domain and so do not concern us. With regard to the other matters of treatment into which we have entered, it is far otherwise, a dentist may be the only available person sufficiently skilled to undertake the direction of the patient until further surgical aid can be obtained, and he can at least prevent such mishaps as the administration of emetics or purgatives which are often erroneously had resort to upon these occasions under the impression that "something must be done." We shall revert to the treatment of foreign bodies lodged in the larynx and respiratory tract upon a subsequent occasion.

THE DENTISTS' REGISTER.—The Secretary of the B.D.A. writes to us calling attention to the fact that whenever dentists change their address a notice should be sent to the Registrar at the General Medical Council, 299 Oxford St. If they do not do so, their names are very likely to be removed from the Register. Moreover, much trouble and anxiety would be saved those who are endeavouring to make the Register more perfect.

The following notice appears in page 3 of the Register :—Important notices to Registered Dentists.—(*a.*) Every Registered Dental Practitioner should be careful to send the Registrar immediate Notice to any change in his Address, and also to answer, without delay, all inquiries that may be sent to him by the Registrar in regard thereto, in order that the correct address may be duly inserted in the Dentists

Register, otherwise, by Section XII of the Dentists Act (1878), such Practitioner is liable to have his name erased from the Dentists Register. (*b*.) After the publication of the name in the printed Dentists Register, that Register alone is the legal evidence of Registration.

THE PARTRIDGE CASE.—We are obliged by pressure upon our space to withhold the full report of this case until our next issue.

SALICYLATED PAPER.—The latest novelty in dressings for wounds has been offered to the German war department. It is salicylated paper, which is to replace salicylated cotton. Advantages claimed for it are extreme lightness, removal from wounds in one piece without leaving fibres adhering as in cotton, and its cheapness. It is much less expensive than cotton. Its adoption by the army will be determined by its durability. It seems a likely material for dental use, and we shall be glad to hear of any experiments made with it.

SAND PAPER FILE.—A contemporary suggests, take a piece of wood three-quarters of an inch square. Slit one end with a fine saw to the depth of two inches. Make a hole and insert a screw so as to tighten the slit. The hole through the first half should be large enough for the screw to pass through easily. Cut sand paper in strips the width of the stick, insert one end in the slit, fasten it by turning the screw, turn the sand paper back on the stick and use it as a file. If one side of the stick be rounded like the ball of the thumb, it will suit better for polishing lingual surfaces.

WHITE CLEAN NAILS ARE A BEAUTY.—The following is useful :

Acid sulph. dil............................	ʒij.
Tr. myrrh	ʒj.
Aquæ	℥jv.

After cleansing the hands dip the fingers for a few moments in the mixture.

Abstracts of Foreign & British Journals.

THE DENTAL REGISTER.

THE TREATMENT OF ALVEOLAR ABSCESS BY THE JENNINGS' METHOD.

The filling of roots of teeth with gutta percha dissolved in chloroform is not new. It has been a general practice for eight or ten years.

By this mode of treatment is meant injecting root sack, and canal to its outlet with gutta percha dissolved in chloroform. In the first place free the root sack, and outlet of its dead matter. How done does not matter provided it is accomplished thoroughly. It is advised to fill the offending root and sack as soon as it is thoroughly renovated—which can be done at one sitting better than a dozen—and if as has been suggested there be caries or necrosis let it be treated externally as such. The abscess is wholly obliterated by the injection. Diseased bony structure is as much benefited by the injection as are the soft parts, but being slower to repair do not respond to the stimulating influences as quickly.

There is no case of alveolar abscess, it is asserted, if the periosteal covering of the root is intact that will not yield to this treatment. The periosteum need not be entire if there be sufficient to give it attachment.

Formerly it was the practice to pump carbolic boric acid, or what not through the root and opening. After the first treatment the root was loosely packed with cotton and left open to the deleterious influences of the air, saliva, and its impurities. After one or two day's waiting the same process is repeated—forcing these acids through the channel nature has been trying to close with new tissue, and in many cases destroying what little advance that has been made towards restoration. Thus it is repeated at intervals for weeks, perhaps months, and the only reason we can see for Nature's final success is because she is more persistent in her efforts to repair, than is the dentist in his destruction.

Referring to Dr. Jennings treatment the writer adds, Gutta percha is inert and is only useful as a stopping, or plug, and the plug plays no part in the cure. In dressing wounds of all kinds it is desirable to bring the parts so completely in contact that there are no pockets in which pus may accumulate. This not being a wound or simply destruction of soft parts—bony structure as well being involved—we can not bring the parts together and thus exclude pus formation, but we fill with a solution that closes the pocket and stimulates nature to effect a cure.

The chloroform it is asserted acts as an antiseptic.

What becomes of the gutta percha left in the sack and canal after the medical properties of the solution have disappeared? It has been said that it becomes encysted or encapsuled, hence, inert and non-irritating.

We do not know what nature may do to dissolve bone or any other material, but Billroth supposes that in the process of inflammatory new formation, lactic acid is evolved which converts the lime into soluble lactate of lime. If this should be the case the lactic acid will help us to get rid of our surplus gutta percha and chloroform to such an extent as to render it granular after being in it a few hours at the temperature of 85° F. As there is no possible way of demonstrating the truth of these theories we will have to content ourselves with the fact that the method of treatment is a success, and that the gutta percha, no matter what becomes of it, has never given us any after trouble.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, Held Nov. 7th, 1887.
Chas. S. Tomes, F.R.S., *President*, in the Chair.

The minutes of the previous meeting having been read and confirmed, Messrs. John Trude Fripp, L.D.S. Ire. and Ed., Charles A. Hayman, L.D.S. Eng., Frank H. Kissack, L.D.S. Eng. signed the Obligation Book, and were formally admitted to membership by the President.

The President then announced that Horace John Gould, L.D.S. Eng. Madras, India; William Mitchell, D.D.S. (Mich.), 15, Upper Brook Street; Charles Augustine Patcin son, L.D.S. Eng., 16, Archway road, Highgate, N., had been duly nominated candidates for membership, and would be balloted for at a subsequent meeting.

Mr. Harry Baldwin, M.R.C.S., L.D.S., 37, Cavendish Square, W., was balloted for and duly elected a Resident Member of the Society.

The Librarian (Mr. Felix Weiss) was called upon by the President for his Report, and stated that since the last meeting the Society had purchased the last (3rd) edition of Sir John Tomes' "System of Dental Surgery;" "The Introduction to General Pathology," by Mr. J. Bland Sutton; and had received the Smithsonian Reports, and the usual periodicals, all of which he proposed to place upon the table at the next meeting.

The Curator (Mr. Storer Bennett) announced that he had received two contributions to the Museum since the June meeting. Mr. H. Lloyd Farebrother had sent an upper and lower maxilla found in the vicinity of "Old Sarum," and which were supposed to belong "to an Anglo-Saxon soldier killed in action, A.D. 527." The jaws, which were very large and finely formed, contained all the lower teeth, and all the upper ones except the second and third molars. Of these, however, the second and third molars on the right side and the second molar on the left had been lost during life, for the alveolus had become absorbed and rounded, but the socket of the left wisdom tooth remained, showing that this tooth had been lost subsequently. The teeth were strong and well-formed, without a trace of caries to be seen upon them; they were however, much worn, the enamel having disappeared from the masticating surface of the back teeth in many cases. Small nodules of tartar appeared on some of the teeth, but they were absolutely free from any discolouration.

Mr. James E. Welch had sent a very minute conical tooth which he had removed from the buccal side of a right upper wisdom, in a lady twenty-eight years of age; the models of the mouth were also sent with the specimen. The tooth measured less than ¼ inch in length.

The Council had authorised the purchase of the following skulls, which would form a valuable addition to their collection:—Great Ant-eater (*Myrmecophaga jubata*), of which there was previously no specimen in the Museum; Vulpine Phalanger (*Phalangista vulpina*); six monkeys, viz.: Mona Monkey (*Cercopithecus mona*); Common Macaque (*Macacus *cynomolgus*); three Bonnet-Monkeys (*Macacus sinicus*); Pinche Monkey (*Midas œdipus*); and a Harnessed Antelope (*Tragelaphus scriptus*). These seven specimens were interesting as they showed various stages of dentition. They had also purchased four skulls which were of especial value, since they illustrated certain pathological conditions of the teeth and jaws of the lower animals that could hardly fail to be instructive; to these specimens in particular, he (the Curator) hoped to have an opportunity of more fully alluding on some future occasion. The skulls to which he referred were :--A Brush-tailed Kangaroo (*Petrogale penicillata*), in which the teeth were encrusted with tartar; an Ichneumon (*Herpestes ichneumon*), in which there was a considerable amount of new bone, the result of inflammation, and also absorption of bone and loss of teeth; two Suricates (*Suricata tetradactyla*), which presented many of the characteristics of the so-called "Riggs' Disease."

Altogether he trusted that the members would consider that the interests of the Society had not been neglected during the recess.

Mr. Henri Weiss contributed the models of the mouth of a young lady aged twenty-two years, in whom the permanent teeth were represented in the lower jaw by the two canines and two first permanent molars; in the upper jaw by the two central, one lateral incisor, and two molars—presumably the twelve-year-old molars, thus proving the deficiency of the four incisors, cuspidati, second and third molars of the lower jaw; and one lateral incisor, the canines, the cuspidati, one second and the third molars in the upper jaw.

At the time the models were taken, six of the temporary set were present, namely: one central and two lateral incisors, one canine, and one second molar of the lower jaw, and the two canine teeth of the upper jaw.

The only illness from which his patient had suffered was scarlet fever, contracted at the age of fourteen months, which was not followed by exfoliation or other affection of the jaws or of the gums. A consideration of the period of development of the permanent set, as well as of the teeth which were present, shows that the tooth follicles could not have been destroyed during the illness, as, for the most part, those teeth which were absent must have had their crowns fairly developed anterior to those which were already erupted. The question is whether the missing teeth are still within the maxilla, or whether their follicles have been absorbed.

The President announced that the discussion upon Cocaine, adjourned from the May meeting of the Society, would be taken at the present meeting. Several members had filled in the forms requesting information as to their experience of the uses and action of cocaine, and these answers would be tabulated and published as an Appendix in the Society's Transactions. (See page 1157.)

Discussion upon Mr. Bland Sutton's Paper.

Mr. Storer Bennett said he had the benefit of seeing proof sheets of Mr. Bland Sutton's paper, and so had read more than the speaker had had time to bring before the Society. He felt hardly justified in doing what he was about to do, namely, to deal with points which, although fully treated of in the text, had yet not been touched upon by Mr. Sutton in his spoken abstract. In the first place Mr. Sutton stated that in the lower animals odontomes were often symmetrical; now this was, he believed, fortunately not the case in man. And the second point he proposed to notice was that Mr. Sutton committed himself to a statement in the proof which he (Mr. Bennett) had seen, that odontomes were seldom, if ever, found in the upper jaw. He did not know whether Mr. Sutton had since made his assertion less arbitrary, but he was sure that odontomes did occur in the upper jaw, and he had in his hand a specimen of such a growth which proved the point. In his specimen there was a noticeable feature, that, viz., there was a cavity in the centre of the odontome.

The President remarked that the Society could hardly hope for anything like a full discussion of Mr. Sutton's elaborate paper, which, although so very suggestive, yet dealt with a subject which Mr. Sutton had made peculiarly his own. Few, he felt sure, would have the temerity, after only some ten minutes' acquaintance with the subject, to attack conclusions at which the lecturer had arrived after long and careful investigation, and an experience extending over a considerable time. He was particularly glad to find that Mr. Sutton placed dentigerous cysts into the same category as odontomes. Any one who sat down to attempt to write a chapter on Odontomes and Dentigerous Cysts would find himself met by the difficulty of determining where one division ended and the other commenced. Cases constantly arose which it is extremely difficult to classify, and placed one in a dilemma, as to which category they belong. Speaking of the odontomes which spring from the soft tissues, he thought that our knowledge of such tumours was at present imperfect and far from satisfactory. The classification of odontomes which had been placed before them to-night appeared to him satisfactory, and more scientific than the one which included the term "dentigerous cyst" as a class *sui generis.* Such, however, was the vitality of terms, which had once become well-known and generally adopted, that he feared it would be some long while before Mr. Sutton's classification would oust the more commonly accepted one. He believed that in the end it would bocome generally adopted. He felt the hearty thanks of the Society were due to Mr. Sutton for his paper, which formed a most valuable contribution to their Transactions. The paper was especially meritorious on account of the most liberal way in which it had been illustrated.

Mr. Sutton having briefly replied, the President proposed a vote of thanks to the readers of Communications, which was duly honoured.

The meeting then adjourned.

Dental News.

THE DENTAL HOSPITAL OF LONDON.

At the annual dinner of the staff and students of the Dental Hospital and School of Dental Surgery. Mr. G. Gregson took the chair. Among those present were Sir Edwin Saunders, Dr. Julius Pollock, Mr. P. Gould, Mr. R. Hepburn, Mr. Underwood, and several members of the staff. After the customary loyal and patriotic toasts, the chairman gave the health of the past and present students, for whom Mr. Bartlett and Mr. Seymour replied.—Sir Edwin Saunders proposed the toast of "The London Dental Hospital and Staff," remarking that the presence of so large an assembly showed how great an appreciation existed of the institution whose welfare they all had at heart. The Dental Hospital of London enjoyed many advantages from its situation, but up to recent times it lacked a lecture theatre and a suitable waiting-room. Thanks to the energy of the Dean (Mr. Morton Smale), and their indefatigable secretary, and the munificence of the Medical Committee and Messrs. Ash, these deficiencies were now being supplied. It was needless to speak of the staff of the hospital, their efficiency and courtesy were known to all his hearers. The toast was acknowledged by Mr. R. H. Woodhouse.—Mr. J. Smith Turner proposed the toast of the "London School of Dental Surgery," observing that since the passing of the Dental Act the *personnel* of the professional as well as the methods of operation had been completely revolutionised. It was very gratifying to know that the School of Dental Surgery was doing excellent work for the profession and to satisfy public requirements.—Mr. Morton Smale responding said that the earnest wishes of the devoted band which originally fought for the establishment of the Dental Hospital and School seemed being realised. The success of the school was instanced by the yearly increase in the number of students and the appreciation of the efforts of the staff and their pupils by the greatly extended limits of the work done at the hospital, necessitating as it did, the enlargement of their premises. He reminded his audience that the hospital had done much for the profession and he trusted that now the profession would do much for the hospital. Speeches by Mr. S. J. Hutchinson, Mr. Pearce Gould and others were made. An excellent selection of vocal and instrumental music was performed during the evening by members of the school and other friends.

APPOINTMENT.

Mr. Henry L. Carter, L.D.S.. has been elected Hon. Dental Surgeon to the Dudley Stuart Home, Paddington, W.

ANSWER TO CORRESPONDENT.

"Registered Dentist."—No such classes are at present in existence in London.

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